IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

NIPPON SHINYAKU CO., LTD., Plaintiff, v. SAREPTA THERAPEUTICS, INC. Defendant.	C.A. No. 21-1015 (GBW) **DEMAND FOR JURY TRIAL**
SAREPTA THERAPEUTICS, INC. and THE UNIVERSITY OF WESTERN AUSTRALIA, Defendant/Counter-Plaintiffs, v. NIPPON SHINYAKU CO., LTD. and NS PHARMA, INC., Plaintiff/Counter-Defendants.	[redacted]

COUNTER-DEFENDANTS' ANSWER TO COUNTER-PLAINTIFFS' AMENDED COUNTERCLAIMS

Counter-Defendants Nippon Shinyaku Co., Ltd. ("Nippon Shinyaku") and NS Pharma, Inc. ("NS Pharma") (collectively, "Counter-Defendants"), by their attorneys, answer the Amended Counterclaims of Counter-Plaintiff Sarepta Therapeutics, Inc. ("Sarepta") and the University of Western Australia ("UWA") (collectively, "Counter-Plaintiffs") and state their affirmative defenses to the Counterclaims asserted against Counter-Defendants. Unless specifically admitted herein each and every allegation in the Counterclaim is denied.

[redacted]

ANSWER TO COUNTERCLAIMS

Responses to Allegations Regarding Nature of the Action

1. Sarepta and UWA assert counterclaims for infringement of U.S. Patent Nos. 9,994,851 ("the '851 patent") (Exhibit A); 10,227,590 ("the '590 patent") (Exhibit B); and 10,266,827 ("the '827 patent") (Exhibit C) (collectively, "the UWA Patents") arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq*. These patent infringement claims arise out of Defendants' unauthorized manufacture, use, sale, offer for sale, and/or importation in the United States of Viltepso, also known as viltolarsen, and Defendants' intentional encouragement of physicians and patients to administer Viltepso.

ANSWER: Counter-Defendants admit that Counter-Plaintiffs' counterclaims purport to assert claims for infringement of the '851 patent, the '590 patent, and the '827 patent. Counter-Defendants deny the remaining allegations in paragraph 1.

2. Sarepta further asserts a counterclaim for declaratory judgment of invalidity of U.S. Patent Nos. 9,708,361 ("the '361 patent"); 10,385,092 ("the '092 patent"); 10,407,461 ("the '461 patent"); 10,487,106 ("the '106 patent"); 10,647,741 ("the '741 patent"); 10,662,217 ("the '217 patent"); and 10,683,322 ("the '322 patent") (collectively, "the NS Patents") arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.* and under the Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq*.

ANSWER: Counter-Defendants admit that Sarepta's counterclaims purport to assert claims for declaratory judgment of invalidity of the '361 patent, the '092 patent, the '461 patent, the '106 patent, the '741 patent, the '217 patent, and the '322 patent. Counter-Defendants deny the remaining allegations in paragraph 2.

3. Sarepta further asserts a counterclaim for breach of contract arising under Delaware state law.

ANSWER: Counter-Defendants admit that Sarepta's counterclaims purport to assert a claim for breach of contract arising under Delaware state law. Counter-Defendants deny the remaining allegations in paragraph 3.

[redacted]

4. Sarepta further asserts a counterclaim for unenforceability of the NS Patents due to inequitable conduct.

ANSWER: Counter-Defendants admit that Sarepta's counterclaims purport to assert a claim for unenforceability due to inequitable conduct. Counter-Defendants deny the remaining allegations in paragraph 4.

Responses to Allegations Regarding the Parties

5. Sarepta is a corporation organized and existing under the laws of the State of Delaware with its principal place of business located at 215 First Street, Cambridge, Massachusetts 02142.

ANSWER: On information and belief, admitted.

6. UWA is a public research university organized and existing under the laws of Australia with its main campus and offices located at 35 Stirling Highway, Crawley, Perth, Western Australia 6009. UWA is the assignee and licensor of the UWA Patents.

ANSWER: On information and belief, admitted.

7. Nippon Shinyaku represents in its Second Amended Complaint that it is a Japanese company with a principal pace of business at 14, Nishinosho-Monguchi-cho, Kisshoin, Minami-ku, Kyoto 601-8550, Japan.

ANSWER: Counter-Defendants admit the allegations in paragraph 7.

8. Nippon Shinyaku represents in its Second Amended Complaint that by virtue of a license agreement with NCNP, Nippon Shinyaku holds the exclusive assertion rights for the NS Patents.

ANSWER: Counter-Defendants admit the allegations in paragraph 8.

9. Upon information and belief, NS Pharma is a corporation organized and existing under the laws of the State of Delaware with its principal place of business at 149 East Ridgewood Ave., Suite 280S, Paramus, NJ 07652. Upon information and belief, NS Pharma is a wholly owned U.S. subsidiary of Nippon Shinyaku. Upon information and belief, NS Pharma is Nippon Shinyaku's U.S. Agent authorized by the FDA to market Viltepso.

ANSWER: Counter-Defendants admit that NS Pharma is a corporation organized and existing under the laws of the State of Delaware. Counter-Defendants further admit that NS Pharma is a wholly-owned subsidiary of Nippon Shinyaku and that NS Pharma is Nippon

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Shinyaku's U.S. Agent authorized by FDA to market Viltepso. Counter-Defendants admit that NS Pharma has a principal place of business at 140 East Ridgewood Ave., Suite 280S, Paramus, NJ 07652. Counter-Defendants deny the remaining allegations in paragraph 9.

Jurisdiction and Venue

10. There is an actual justiciable controversy between Defendants and Sarepta and UWA concerning Defendants' liability for infringement of the UWA Patents.

ANSWER: Counter-Defendants admit that an actual justiciable controversy exists between Counter-Defendants and Sarepta and UWA regarding Sarepta and UWA's allegations that Counter-Defendants infringe the UWA Patents. Counter-Defendants deny liability for infringement of the UWA Patents and deny the remaining allegations in paragraph 10.

11. Sarepta/UWA's counterclaims against Defendants for infringement of the UWA Patents arise under the patent laws of the United States, 35 U.S.C. § 1 *et seq*.

ANSWER: Paragraph 11 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta/UWA's counterclaims against Counter-Defendants for infringement of the UWA Patents arise under the patent laws of the United States, 35 U.S.C. § 1 et seq. Counter-Defendants deny the remaining allegations in paragraph 11.

12. This Court has subject matter jurisdiction over the patent infringement counterclaims under 28 U.S.C. §§ 1331 and 1338(a).

ANSWER: Paragraph 12 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that the Court has subject matter jurisdiction over the patent infringement counterclaims under 28 U.S.C. §§ 1331 and 1338(a). Counter-Defendants deny any allegations of infringement of the UWA Patents and deny the remaining allegations in paragraph 12.

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13. There is an actual justiciable controversy between Defendants and Sarepta concerning the invalidity of the NS Patents as evidenced by Nippon Shinyaku's allegations in the Second Amended Complaint concerning Sarepta's alleged liability for infringement of the NS Patents.

ANSWER: Paragraph 13 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that there is an actual justiciable controversy between Counter-Defendants and Sarepta concerning the invalidity of the NS Patents as evidenced by Nippon Shinyaku's allegations in the Second Amended Complaint concerning Sarepta's liability for infringement of the NS Patents. Counter-Defendants deny the remaining allegations in paragraph 13.

14. Sarepta's counterclaim for declaratory judgment of invalidity of the NS Patents arises under the patent laws of the United States, 35 U.S.C. § 1 *et seq.* and under the Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq*.

ANSWER: Paragraph 14 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta's counterclaim for declaratory judgment of invalidity of the NS Patents arises under the patent laws of the United States, 35 U.S.C. § 1 *et seq.* and under the Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq.* Counter-Defendants deny the remaining allegations in paragraph 14.

15. This Court has subject matter jurisdiction over the declaratory judgment counterclaim of invalidity of the NS Patents under 28 U.S.C. §§ 1331, 1338(a), 2201, and 2202.

ANSWER: Paragraph 15 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that this Court has subject matter jurisdiction over the declaratory judgment counterclaim of invalidity of the NS Patents under 28 U.S.C. §§ 1331, 1338(a), 2201, and 2202. Counter-Defendants deny the remaining allegations in paragraph 15.

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16. There is an actual justiciable controversy between Nippon Shinyaku and Sarepta concerning Nippon Shinyaku's breach of contract.

ANSWER: Paragraph 16 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta's counterclaims purport to assert a breach of contract claim. Counter-Defendants deny the remaining allegations in paragraph 16.

17. Sarepta's breach of contract counterclaim arises under Delaware state law.

ANSWER: Paragraph 17 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta's counterclaims purport to assert a breach of contract claim under Delaware law. Counter-Defendants deny the remaining allegations in paragraph 17.

18. This Court has subject matter jurisdiction over the breach of contract counterclaim under 28 U.S.C. §§ 1332(a) and 1367(a).

ANSWER: Paragraph 18 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta's counterclaims purport to assert a breach of contract claim. Counter-Defendants deny the remaining allegations in paragraph 18.

19. Personal jurisdiction is proper over Nippon Shinyaku at least because Nippon Shinyaku has commenced this action and thus submitted to this Court's personal jurisdiction.

ANSWER: Paragraph 19 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that personal jurisdiction is proper over Nippon Shinyaku for purposes of this action only at least because Nippon Shinyaku has commenced this action and thus submitted to this Court's personal jurisdiction. Counter-Defendants deny the remaining allegations in paragraph 19.

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20. Upon information and belief, personal jurisdiction is proper over NS Pharma, a Delaware corporation, at least because it has committed acts of infringement of the UWA Patents in Delaware by offering to sell and selling Viltepso (viltolarsen) in the State of Delaware. In addition, upon information and belief, Nippon Shinyaku conferred with, and coordinated with, NS Pharma in bringing this action and thus NS Pharma has consented to this Court's personal jurisdiction.

ANSWER: Paragraph 20 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that personal jurisdiction is proper over NS Pharma for purposes of this action only. Counter-Defendants deny the remaining allegations in paragraph 20.

21. Upon information and belief, Nippon Shinyaku directly or through its agents including its wholly owned U.S. subsidiary NS Pharma, manufactures, markets, offers to sell, sells, and/or distributes Viltepso (viltolarsen) in the State of Delaware and elsewhere in the United States, and Viltepso is prescribed by physicians practicing in Delaware and elsewhere in the United States, is available at pharmacies or medical facilities located within Delaware and elsewhere in the United States, and/or is used by patients in, and/or residents of, Delaware and elsewhere in the United States.

ANSWER: Counter-Defendants admit that Nippon Shinyaku directly or through its agents and other third parties manufactures, markets, offers to sell, sells, and/or distributes Viltepso (viltolarsen) in the United States. Counter-Defendants also admit that Viltepso is prescribed by physicians practicing in the United States, is available at pharmacies or medical facilities in the United States, and/or is used by patients in, and/or residents of, Delaware and elsewhere in the United States. Counter-Defendants deny the remaining allegations in paragraph 21.

22. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(c)(3) and 1400(b).

ANSWER: Paragraph 22 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that venue is proper in this Court for purposes of this action only. Counter-Defendants deny the remaining allegations in paragraph 22.

[redacted]

The UWA Patents

23. On June 12, 2018, the USPTO issued the '851 patent, entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof." The '851 patent is assigned to The University of Western Australia. A copy of the '851 patent is attached hereto as Exhibit A. The '851 patent is fully maintained and is valid and enforceable. Sarepta has exclusive rights to the '851 patent for the treatment of muscular dystrophies and the right to enforce the '851 patent.

ANSWER: Counter-Defendants admit that the '851 patent is entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" and states that it issued on June 12, 2018. Counter-Defendants further admit that the face of the '851 patent lists the Assignee as the University of Western Australia and that Sarepta's Exhibit A purports to be a copy of the '851 patent. Counter-Defendants deny that the '851 patent is valid and enforceable. Counter-Defendants are without knowledge or information sufficient to form a belief as to the truth of the remaining allegations in paragraph 23 and therefore deny the same.

24. On March 12, 2019, the USPTO issued the '590 patent, entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof." The '590 patent is assigned to The University of Western Australia. A copy of the '590 patent is attached hereto as Exhibit B. The '590 patent is fully maintained and is valid and enforceable. Sarepta has exclusive rights to the '590 patent for the treatment of muscular dystrophies and the right to enforce the '590 patent.

ANSWER: Counter-Defendants admit that the '590 patent is entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" and states that it issued on March 12, 2019. Counter-Defendants further admit that the face of the '590 patent lists the Assignee as the University of Western Australia and that Sarepta's Exhibit B purports to be a copy of the '590 patent. Counter-Defendants deny that the '590 patent is valid and enforceable. Counter-Defendants are without knowledge or information sufficient to form a belief as to the truth of the remaining allegations in paragraph 24 and therefore deny the same.

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25. On April 23, 2019, the USPTO issued the '827 patent, entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof." The '827 patent is assigned to The University of Western Australia. A copy of the '827 patent is attached hereto as Exhibit C. The '827 patent is fully maintained and is valid and enforceable. Sarepta has exclusive rights to the '827 patent for the treatment of muscular dystrophies and the right to enforce the '827 patent.

ANSWER: Counter-Defendants admit that the '827 patent is entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" and states that it issued on April 23, 2019. Counter-Defendants further admit that the face of the '827 patent lists the Assignee as the University of Western Australia and that Sarepta's Exhibit C purports to be a copy of the '827 patent. Counter-Defendants deny that the '827 patent is valid and enforceable. Counter-Defendants are without knowledge or information sufficient to form a belief as to the truth of the remaining allegations in paragraph 25 and therefore deny the same.

26. The UWA Patents are listed in the U.S. Food and Drug Administration's ("FDA") *Approved Drug Products with Therapeutic Equivalence Evaluations* ("the Orange Book") for New Drug Application ("NDA") No. 211970 for Sarepta's Vyondys 53® product, also known as golodirsen. Each of the UWA Patents covers, *inter alia*, an antisense oligonucleotide of 20 to 31 bases wherein a base sequence comprises at least 12 consecutive bases of SEQ ID NO: 195 disclosed in the UWA Patents, in which uracil bases are thymine bases, and a method of using it for the treatment of Duchenne Muscular Dystrophy ("DMD") in patients who have a mutation of the DMD gene that is amenable to exon 53 skipping.

ANSWER: Counter-Defendants admit that the UWA Patents are listed in the U.S. Food and Drug Administration's ("FDA") Approved Drug Products with Therapeutic Equivalence Evaluations ("the Orange Book") for New Drug Application ("NDA") No. 211970 for Sarepta's Vyondys 53® product, also known as golodirsen. Counter-Defendants further admit that each of the claims in the UWA Patents claims, inter alia, an antisense oligonucleotide of 20 to 31 bases, wherein the base sequence comprises at least 12 consecutive bases of SEQ ID NO: 195 in which uracil bases are thymine bases. Counter-Defendants further admit that the claims of the '827 patent claim a method for treating a patient with DMD in need thereof who has a mutation of the DMD

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gene that is amenable to exon 53 skipping. Counter-Defendants deny the remaining allegations in paragraph 26.

Responses to Allegations Regarding Defendants' Infringing Product[1]

27. Upon information and belief, Defendants' product, Viltepso (viltolarsen), is a morpholino antisense oligonucleotide comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA. Viltepso (viltolarsen) Highlights of Prescribing Information (Aug. 2020),[2] § 11; *see also* Viltepso (viltolarsen) Highlights of Prescribing Information (Mar. 2021)[3]. Viltepso contains 21 bases and CCTCCGGTTCTGAAGGTGTTC as the base sequence. Viltepso (viltolarsen) Highlights of Prescribing Information (Mar. 2021), § 11.

ANSWER: Counter-Defendants admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of August 2020 and with a revision date of March 2021 states "Viltolarsen is an antisense oligonucleotide of the phosphorodiamidate morpholino oligomer (PMO) subclass." Counter-Defendants also admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of August 2020 and with a revision date of March 2021 states "Viltolarsen contains 21 linked subunits." Counter-Defendants further admit that the sequence of bases of Viltepso from the 5' end to the 3' end is CCTCCGGTTCTGAAGGTGTTC. Counter-Defendants deny the remaining allegations in paragraph 27.

[1] Counter-Defendants have adopted the headings as provided in Counter-Plaintiff's Counterclaims for ease of reference only. Counter-Defendants do not admit any allegation found in any of the headings and deny that their product is "infringing."

[2] Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Aug. 2020), https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/212154Orig1s000lbl.pdf (last visited Jan. 28, 2022).

[3] Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), https://www.viltepso.com/prescribing-information (last visited Jan. 28, 2022).

[redacted]

28. Upon information and belief, Viltepso induces exon 53 skipping in a human dystrophin pre-mRNA. *Id.* § 12.1.

ANSWER: Counter-Defendants admit that § 12.1 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of August 2020 and with a revision date of March 2021 states "VILTEPSO is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 28.

29. Upon information and belief, Viltepso is administered to DMD patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping and induces skipping of exon 53 of dystrophin pre-mRNA. *Id.* §§ 1, 12.1. Defendants' label for Viltepso has encouraged and continues to encourage such use.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of August 2020 and with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping," and § 12.1 states "VILTEPSO is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 53 skipping. Exon 53 skipping is intended to allow for production of an internally truncated dystrophin protein in patients with genetic mutations that are amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 29.

30. Upon information and belief, Defendants conducted pre-clinical and clinical development of Viltepso (viltolarsen), including clinical trials, to generate data in support of their submission of an NDA with the FDA for Viltepso (viltolarsen).

ANSWER: Counter-Defendants admit that Nippon Shinyaku conducted pre-clinical and clinical development of Viltepso (viltolarsen), including clinical trials, to generate data in support of the submission of an NDA with the FDA for Viltepso (viltolarsen). Counter-Defendants deny

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that NS Pharma was involved in the pre-clinical development of Viltepso. Counter-Defendants deny the remaining allegations in paragraph 30.

31. Upon information and belief, on October 2, 2019, Nippon Shinyaku announced that it had submitted a rolling NDA for Viltepso (viltolarsen) with the FDA. Nippon Shinyaku News Release (Oct. 2, 2019).[4]

ANSWER: Counter-Defendants admit that the article cited in Counter-Plaintiffs' counterclaims titled "U.S. FDA Submission of New Drug Application for NS-065/NCNP-01 (viltolarsen)" dated October 2, 2019 states that Nippon Shinyaku "announced that it has completed the submission of its rolling New Drug Application (NDA) to the U.S. Food and Drug Administration (FDA) for NS-065/NCNP-01 (viltolarsen)." Counter-Defendants deny the remaining allegations in paragraph 31.

32. On August 12, 2020, the FDA announced it had granted accelerated approval to Viltepso for the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. FDA News Release (Aug. 12, 2020).[5]

ANSWER: Counter-Defendants admit that the article cited in Counter-Plaintiffs' counterclaims titled "FDA Approves Targeted Treatment for Rare Duchenne Muscular Dystrophy Mutation" dated August 12, 2020 states that "[t]oday, the U.S. Food and Drug Administration granted accelerated approval to Viltepso (viltolarsen) injection for the treatment of Duchenne muscular dystrophy (DMD) in patients wo have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 32.

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[4] Nippon Shinyaku Press Release (Oct. 2, 2019), https://www.nippon-shinyaku.co.jp/file/download.php?file_id=3838 (last visited Jan. 28, 2022).

[5] FDA News Release (Aug. 12, 2020), https://www.fda.gov/news-events/press-announcements/fda-approves-targeted-treatment-rare-duchenne-muscular-dystrophy-mutation (last visited Jan. 28, 2022).

[redacted]

33. Upon information and belief, Nippon Shinyaku announced that NS Pharma, a wholly owned U.S. subsidiary of Nippon Shinyaku, had launched Viltepso for commercial sales in the United States as of August 19, 2020. Nippon Shinyaku News Release (Aug. 20, 2020).[6] Upon information and belief, NS Pharma is Nippon Shinyaku's U.S. Agent authorized by the FDA to market Viltepso. *Id.*

ANSWER: Counter-Defendants admit that the article cited in Counter-Plaintiffs' counterclaims titled "VILTEPSO™ (viltolarsen) injection Now Commercially Available in the U.S." dated August 20, 2020 states that "Nippon Shinyaku Co., Ltd. . . . announced today that NS Pharma, Inc. . . . a wholly owned subsidiary of Nippon Shinyaku made VILTEPSO™ (viltolarsen) now available for commercial sales in the United States market as of August 19 (EST)." Counter-Defendants further admit that NS Pharma is Nippon Shinyaku's U.S. Agent authorized by the FDA to market Viltepso. Counter-Defendants deny the remaining allegations in paragraph 33.

34. Upon information and belief, since at least August 2020, Defendants have encouraged physicians to treat DMD patients by administering Viltepso to induce skipping of exon 53 of dystrophin pre-mRNA including through their labels for Viltepso. Defendants have also facilitated pricing and reimbursement of Viltepso in the United States.

ANSWER: Paragraph 34 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. Counter-Defendants deny the remaining allegations in paragraph 34.

Responses to Allegations Regarding Defendants' Awareness of the UWA Patents

35. Upon information and belief, Defendants have been familiar with and knew of the UWA Patents prior to this litigation. Upon information and belief, Defendants believed prior to this litigation that one or more claims of the UWA Patents covered Viltepso (viltolarsen). When the UWA Patents issued in 2018 and 2019, for example, Defendants' NDA seeking marketing approval for viltolarsen was under regulatory review in the United States. Upon information and belief, Defendants became aware of the UWA Patents after the UWA Patents were submitted for

[6] Nippon Shinyaku Press Release (Aug. 20, 2020), https://www.nippon-shinyaku.co.jp/file/download.php?file_id=3868 (last visited Jan. 28, 2022).

[redacted]

listing in the FDA Orange Book for Vyondys 53® in December 2019. Upon information and belief, Defendants expected that their Viltepso (viltolarsen) product, if approved, would compete directly with Sarepta's Vyondys 53® (golodirsen) product. Upon information and belief, Defendants learned of the UWA Patents through their efforts to research and/or monitor third-party U.S. patents that could potentially interfere with their ability to market Viltepso (viltolarsen) in the United States.

ANSWER: Counter-Defendants admit that they were aware of the UWA Patents by at least September 2019. Counter-Defendants further admit that the UWA Patents include claims aimed at capturing VILTEPSO. Counter-Defendants admit that the NDA seeking marketing approval for viltolarsen was under regulatory review in the United States in 2018 and 2019. Counter-Defendants further admit that Nippon Shinyaku and Sarepta are direct competitors in certain markets for antisense oligonucleotide-based therapies for the treatment of DMD. Counter-Defendants deny the remaining allegations in paragraph 35.

36. Sarepta and Nippon Shinyaku entered into a Mutual Confidentiality Agreement ("MCA") effective June 1, 2020. Upon information and belief, Defendants were already aware of the UWA Patents when Sarepta and Nippon Shinyaku began business discussions under the MCA in June 2020.

ANSWER: Counter-Defendants admit that Sarepta and Nippon Shinyaku entered into a Mutual Confidentiality Agreement ("MCA") effective June 1, 2020. Counter-Defendants further admit that they were aware of the UWA Patents at least as of September 2019. Counter-Defendants deny the remaining allegations in paragraph 36.

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM I
(Infringement of the '851 Patent)

37. Sarepta and UWA reallege each of the foregoing Paragraphs 1-36 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of Paragraphs 1-36 as if fully set forth herein.

[redacted]

38. Sarepta and UWA incorporate by reference Sarepta's answers and responses to Nippon Shinyaku's Second Amended Complaint ("SAC") as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference the Second Amended Complaint as if fully set forth herein.

39. Claim 1 of the '851 patent recites:

> An antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the target region is within annealing site H53A(+23+47) and annealing site H53A(+39+69), wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof.

ANSWER: Counter-Defendants admit that paragraph 39 quotes claim 1 of the '851 patent.

40. Upon information and belief, Viltepso satisfies each element of at least claim 1 of the '851 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 40.

41. Viltolarsen is an antisense oligonucleotide of the phosphorodiamidate morpholino oligomer (PMO) subclass. *See* Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), § 11. Viltolarsen contains 21 linked subunits. *Id.* The base sequence of viltolarsen is CCTCCGGTTCTGAAGGTGTTC, which includes CTGAAGGTGTTC as 12 consecutive bases. *Id.*

ANSWER: Counter-Defendants admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states "Viltolarsen is an antisense oligonucleotide of the phosphorodiamidate morpholino oligomer (PMO) subclass." Counter-Defendants also admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states "Viltolarsen contains 21 linked subunits." Counter-Defendants further admit that the sequence of bases of Viltepso from the 5' end to the 3' end is

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CCTCCGGTTCTGAAGGTGTTC. Counter-Defendants deny the remaining allegations in paragraph 41.

42. Viltepso is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 53 skipping. *Id.* § 12.1.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 12.1 that "VILTEPSO is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 53 skipping. Exon 53 skipping is intended to allow for production of an internally truncated dystrophin protein in patients with genetic mutations that are amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 42.

43. Viltepso is indicated for the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *Id.* § 1.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 43.

44. Upon information and belief, Defendants have directly infringed and continue to directly infringe at least claim 1 of the '851 patent, either literally or under the doctrine of equivalents, by engaging in the commercial manufacture, use, offer for sale, sale, and/or importation of Viltepso in the United States in violation of 35 U.S.C. § 271(a).

ANSWER: Counter-Defendants deny the allegations in paragraph 44.

[redacted]

45. Upon information and belief, Defendants knew or should have known of the existence of the '851 patent at least as of the date of its issuance. For example, upon information and belief, Defendants learned of the '851 patent through their monitoring of third-party patent rights, including the UWA Patents, and their efforts to obtain approval for, and market, viltolarsen in the United States. Upon information and belief, Defendants were aware of the '851 patent before June 2020 when Nippon Shinyaku and Sarepta began business discussions under the MCA.

ANSWER: Counter-Defendants admit that they were aware of the '851 patent by at least September 2019. Counter-Defendants deny the remaining allegations in paragraph 45.

46. Viltepso is approved for use in the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *See* Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), § 1. Upon information and belief, Viltepso has no substantial non-infringing uses, and Defendants know that Viltepso is especially made or especially adapted for use in infringement of the '851 patent.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 46.

47. Upon information and belief, Defendants' sale, offer for sale, and/or distribution of Viltepso includes labeling indicating that it is approved by the FDA to treat DMD in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 53 skipping and instructs physicians and patients to use Viltepso to treat DMD. *Id*. Upon information and belief, Defendants specifically intend that Viltepso be used to treat DMD with the knowledge that it would infringe the '851 patent.

ANSWER: Counter-Defendants admit that Viltepso is sold, offered for sale, and/or distributed in the United States and that its Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 47.

[redacted]

48. Upon information and belief, Defendants have induced and/or contributed to and continue to induce and/or contribute to infringement of at least claim 1 of the '851 patent, either literally or under the doctrine of equivalents, in violation of 35 U.S.C. §§ 271(b) and/or (c).

ANSWER: Counter-Defendants deny the allegations in paragraph 48.

49. Upon information and belief, Defendants' infringement of the '851 patent has been willful and continues to be willful, entitling Sarepta and UWA to enhanced damages pursuant to 35 U.S.C. § 284. Upon information and belief, Defendants knew or should have known that their conduct related to the development, manufacture, use, offer for sale, sale, and/or importation of Viltepso constituted an unreasonable risk of infringement of at least claim 1 of the '851 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 49.

50. This case is exceptional and Sarepta and UWA are entitled to attorneys' fees and costs incurred in prosecuting this action pursuant to 35 U.S.C. § 285.

ANSWER: Counter-Defendants deny the allegations in paragraph 50.

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM II
(Infringement of the '590 Patent)

51. Sarepta and UWA reallege each of the foregoing Paragraphs 1-50 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of Paragraphs 1-50 as if fully set forth herein.

52. Sarepta and UWA incorporate by reference Sarepta's answers and responses to Nippon Shinyaku's Second Amended Complaint as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference the Second Amended Complaint as if fully set forth herein.

53. Claim 1 of the '590 patent recites:

> An antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof.

[redacted]

ANSWER: Counter-Defendants admit that paragraph 53 quotes claim 1 of the '590 patent.

54. Upon information and belief, Viltepso satisfies each element of at least claim 1 of the '590 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 54.

55. Viltolarsen is an antisense oligonucleotide of the phosphorodiamidate morpholino oligomer (PMO) subclass. *See* Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), § 11. Viltolarsen contains 21 linked subunits. *Id.* The base sequence of viltolarsen is CCTCCGGTTCTGAAGGTGTTC, which includes CTGAAGGTGTTC as 12 consecutive bases. *Id.*

ANSWER: Counter-Defendants admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states "Viltolarsen is an antisense oligonucleotide of the phosphorodiamidate morpholino oligomer (PMO) subclass." Counter-Defendants also admit that § 11 of the Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states "Viltolarsen contains 21 linked subunits." Counter-Defendants further admit that the sequence of bases of Viltepso from the 5' end to the 3' end is CCTCCGGTTCTGAAGGTGTTC. Counter-Defendants deny the remaining allegations in paragraph 55.

56. Viltepso is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with a genetic mutation that is amenable to exon 53 skipping. *Id.* § 12.1.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 12.1 that "VILTEPSO is designed to bind to exon 53 of dystrophin pre-mRNA resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 53 skipping. Exon 53 skipping is intended to allow for production of an internally truncated dystrophin protein in patients with genetic mutations that are amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 56.

[redacted]

57. Viltepso is indicated for the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *Id.* § 1.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 57.

58. Upon information and belief, Defendants have directly infringed and continue to directly infringe at least claim 1 of the '590 patent, either literally or under the doctrine of equivalents, by engaging in the commercial manufacture, use, offer for sale, sale, and/or importation of Viltepso in the United States in violation of 35 U.S.C. § 271(a).

ANSWER: Counter-Defendants deny the allegations in paragraph 58.

59. Upon information and belief, Defendants knew or should have known of the existence of the '590 patent at least as of the date of its issuance. For example, upon information and belief, Defendants learned of the '590 patent through their monitoring of third-party patent rights, including the UWA Patents, and their efforts to obtain approval for, and market, viltolarsen in the United States. Upon information and belief, Defendants were aware of the '590 patent before June 2020 when Nippon Shinyaku and Sarepta began business discussions under the MCA.

ANSWER: Counter-Defendants admit that they were aware of the '590 patent by at least September 2019. Counter-Defendants deny the remaining allegations in paragraph 59.

60. Viltepso is approved for use in the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *See* Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), § 1. Upon information and belief, viltolarsen has no substantial non-infringing uses, and Defendants know that viltolarsen is especially made or especially adapted for use in infringement of the '590 patent.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 60.

[redacted]

61. Upon information and belief, Defendants' sale, offer for sale, and/or distribution of Viltepso includes labeling indicating that it is approved by the FDA to treat DMD in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 53 skipping and instructs physicians and patients to use Viltepso to treat DMD. *Id*. Upon information and belief, Defendants specifically intend that Viltepso be used to treat DMD with the knowledge that it would infringe the '590 patent.

ANSWER: Counter-Defendants admit that Viltepso is sold, offered for sale, and/or distributed in the United States and that its Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 61.

62. Upon information and belief, Defendants have induced and/or contributed to and continue to induce and/or contribute to infringement of at least claim 1 of the '590 patent, either literally or under the doctrine of equivalents, in violation of 35 U.S.C. §§ 271(b) and/or (c).

ANSWER: Counter-Defendants deny the allegations in paragraph 62.

63. Upon information and belief, Defendants' infringement of the '590 patent has been willful and continues to be willful, entitling Sarepta and UWA to enhanced damages pursuant to 35 U.S.C. § 284. Upon information and belief, Defendants knew or should have known that their conduct related to the development, manufacture, use, offer for sale, sale, and/or importation of Viltepso constituted an unreasonable risk of infringement of at least claim 1 of the '590 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 63.

64. This case is exceptional and Sarepta and UWA are entitled to attorneys' fees and costs incurred in prosecuting this action pursuant to 35 U.S.C. § 285.

ANSWER: Counter-Defendants deny the allegations in paragraph 64.

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM III
(Infringement of the '827 Patent)

65. Sarepta and UWA reallege each of the foregoing Paragraphs 1-64 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of Paragraphs 1-64 as if fully set forth herein.

[redacted]

66. Sarepta and UWA incorporate by reference Sarepta's answer and responses to Nippon Shinyaku's Second Amended Complaint as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference the Second Amended Complaint as if fully set forth herein.

67. Claim 1 of the '827 patent recites:

> A method for treating a patient with Duchenne muscular dystrophy (DMD) in need thereof who has a mutation of the DMD gene that is amenable to exon 53 skipping, comprising administering to the patient an antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof.

ANSWER: Counter-Defendants admit that paragraph 67 quotes claim 1 of the '827 patent.

68. Upon information and belief, the use of Viltepso satisfies each element of, and directly infringes, either literally or under the doctrine of equivalents, at least claim 1 of the '827 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 68.

69. Viltepso is indicated for the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *See* Viltepso (viltolarsen) Highlights of Prescribing Information (Rev. Mar. 2021), § 1.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 69.

[redacted]

70. Upon information and belief, Defendants knew or should have known of the existence of the '827 patent at least as of the date of its issuance. For example, upon information and belief, Defendants learned of the '827 patent through their monitoring of third-party patent rights, including the UWA Patents, and their efforts to obtain approval for, and market, viltolarsen in the United States. Upon information and belief, Defendants were aware of the '827 patent before June 2020 when Nippon Shinyaku and Sarepta began business discussions under the MCA.

ANSWER: Counter-Defendants admit that they were aware of the '827 patent by at least September 2019. Counter-Defendants deny the remaining allegations in paragraph 70.

71. Viltepso is approved for use in the treatment of DMD in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping. *Id.* Upon information and belief, viltolarsen has no substantial non-infringing uses, and Defendants know that viltolarsen is especially made or especially adapted for use in infringement of the '827 patent.

ANSWER: Counter-Defendants admit that Viltepso (viltolarsen) Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 71.

72. Upon information and belief, Defendants' sale, offer for sale, and/or distribution of Viltepso includes labeling indicating that it is approved by the FDA to treat DMD in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 53 skipping and instructs physicians and patients to use Viltepso to treat DMD. *Id.* Upon information and belief, Defendants specifically intend that Viltepso be used to treat DMD with the knowledge that it would infringe the '827 patent.

ANSWER: Counter-Defendants admit that Viltepso is sold, offered for sale, and/or distributed in the United States and that its Highlights of Prescribing Information with a revision date of March 2021 states in § 1 that "VILTEPSO is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the DMD gene that is amenable to exon 53 skipping." Counter-Defendants deny the remaining allegations in paragraph 72.

[redacted]

73. Upon information and belief, Defendants have induced and/or contributed to and continue to induce and/or contribute to infringement of at least claim 1 of the '827 patent, either literally or under the doctrine of equivalents, in violation of 35 U.S.C. §§ 271(b) and/or (c).

ANSWER: Counter-Defendants deny the allegations in paragraph 73.

74. Upon information and belief, Defendants' infringement of the '827 patent has been willful and continues to be willful, entitling Sarepta and UWA to enhanced damages pursuant to 35 U.S.C. § 284. Upon information and belief, Defendants knew or should have known that their conduct related to the development, manufacture, use, offer for sale, sale, and/or importation of Viltepso constituted an unreasonable risk of infringement of at least claim 1 of the '827 patent.

ANSWER: Counter-Defendants deny the allegations in paragraph 74.

75. This case is exceptional and Sarepta and UWA are entitled to attorneys' fees and costs incurred in prosecuting this action pursuant to 35 U.S.C. § 285.

ANSWER: Counter-Defendants deny the allegations in paragraph 75.

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM IV
(Declaration of Invalidity of the NS Patents)

76. Sarepta realleges each of the foregoing Paragraphs 1-75 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of Paragraphs 1-75 as if fully set forth herein.

77. Sarepta incorporates by reference its answers and responses to Nippon Shinyaku's Second Amended Complaint.

ANSWER: Counter-Defendants incorporate by reference the Second Amended Complaint as if fully set forth herein.

78. Each claim of the NS Patents is invalid for failure to comply with one or more requirements of the patent laws of the United States, including without limitation, 35 U.S.C. §§ 101, 102, 103, 112, and/or obviousness-type double patenting, and the rules, regulations, and laws pertaining thereto.

ANSWER: Counter-Defendants deny the allegations in paragraph 78.

79. By way of example, the claims of the NS Patents are invalid under 35 U.S.C. §§ 102 and/or 103 in view of Popplewell, L.J., *Comparative Analysis of Antisense Oligonucleotide Sequences Targeting Exon 53 of the Human DMD Gene: Implications for Future Clinical Trials*, Neuromuscular Disorders 20:102–110 (2010) ("Popplewell") and Sazani, P., *Safety Pharmacology and Genotoxicity Evaluation of AVI-4658*, Int'l J. Toxicology 29(2):143–156 (2010) ("Sazani"),

alone or in combination with other prior art, for at least the reasons set forth in Sarepta's IPR Petitions challenging the NS Patents. In granting Sarepta's IPR Petitions challenging all claims of all seven NS Patents, for example, the Patent Trial and Appeal Board found Sarepta's arguments and evidence of unpatentability persuasive, concluding in each institution decision that Sarepta "has demonstrated a reasonable likelihood of success in proving that the challenged claims of the [patent] are unpatentable." *See Sarepta Therapeutics, Inc. v. Nippon Shinyaku Co., Ltd.*, Decisions Granting Institution in IPR2021-01134, Paper No. 20 (Jan. 12, 2022); IPR2021-01135, Paper No. 20 (Jan. 12, 2022); IPR2021-01136, Paper No. 19 (Jan. 13, 2022); IPR2021-01137, Paper No. 18 (Jan. 13, 2022); IPR2021-01138, Paper No. 18 (Jan. 13, 2022); IPR2021-01139, Paper No. 18 (Jan. 13, 2022); and IPR2021-01140, Paper No. 18 (Jan. 12, 2022).

ANSWER: Counter-Defendants admit that the Patent Trial and Appeal Board stated in the Institution Decisions for the IPR Petitions that Sarepta "has demonstrated a reasonable likelihood of success in proving that the challenged claims of the [patent] are unpatentable." Counter-Defendants deny the remaining allegations in paragraph 79.

80. An actual case or controversy exists between Sarepta and Defendants as to whether the claims of the NS Patents are invalid.

ANSWER: Paragraph 80 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that there is an actual case or controversy between Counter-Defendants and Sarepta concerning the invalidity of the NS Patents. Counter-Defendants deny the remaining allegations in paragraph 80.

81. Sarepta is entitled to a declaratory judgment that the claims of the NS Patents are invalid.

ANSWER: Counter-Defendants deny the allegations of paragraph 81.

82. This case is exceptional and Sarepta is entitled to attorneys' fees and costs incurred in prosecuting this action pursuant to 35 U.S.C. § 285.

ANSWER: Counter-Defendants deny the allegations of paragraph 82.

[redacted]

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM V
(Breach of Contract)

83. Sarepta realleges each of the foregoing Paragraphs 1-82 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of Paragraphs 1-82 as if fully set forth herein.

84. Sarepta incorporates by reference its answers and responses in Sarepta's Answer and Counterclaims to Nippon Shinyaku's Second Amended Complaint as fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their Second Amended Complaint as if fully set forth herein.

85. Sarepta asserts a claim for breach of contract arising under Delaware state law. This Court has subject matter jurisdiction over this breach of contract claim under 28 U.S.C. §§ 1332(a) and 1367(a).

ANSWER: Paragraph 85 contains legal conclusions to which no response is required. To the extent a response is required, Counter-Defendants admit that Sarepta's counterclaims purport to assert a breach of contract claim arising under Delaware state law. Counter-Defendants deny the remaining allegations in paragraph 85.

86. This claim for breach of contract arises out of Nippon Shinyaku's material breach of the MCA with Sarepta.

ANSWER: Counter-Defendants deny the allegations in paragraph 86.

87. Properly interpreted, the MCA is a valid and enforceable contract between Sarepta and Nippon Shinyaku.

ANSWER: Counter-Defendants admit that the MCA is a valid and enforceable contract between Sarepta and Nippon Shinyaku. Counter-Defendants deny any remaining allegations in paragraph 87.

[redacted]

88. Sections 1-3 of the MCA define "Confidential Information" and proscribe improper disclosures or uses of confidential information beyond the permitted purposes. Section 2.2, entitled "Obligations of Confidentiality and Non-Use," states among other relevant provisions that:

> The Parties intend and agree that this Agreement, the Proposed Transaction and all disclosures, including all meetings, discussions, correspondence, communications, documents, or other materials exchanged between the Parties made in connection with this Agreement and the Proposed Transaction shall not be submitted, referenced, admitted or otherwise used by the Recipient, its Affiliates, or their respective Representatives against the other Party in any legal action, except in an action to enforce the terms of this Agreement, and shall be treated as conducted in the aid of negotiation and shall be governed by and entitled to the protections and privileges of Delaware Rule of Evidence 408 and Federal Rule of Evidence 408, as well as any and all analogous or applicable privileges or additional limitations on use and disclosure set forth herein. Furthermore, regardless of whether the Proposed Transaction leads to any arrangement or resolution of issues, the fact that these confidential Proposed Transactions occurred shall not be referenced in any legal action currently pending, including but not limited to the EP Oppositions, the JP Actions, or the Potential Actions. Neither Party nor their Affiliates or Representatives shall in any way attempt to place into evidence any document, fact, statement or opinion in any way relating to the Proposed Transaction for any purpose, regardless of whether such document, fact, statement or opinion would be admissible under FRE 408 or any other analogous or applicable privilege.

D.I. 2-1 at 3.

ANSWER: Counter-Defendants admit that paragraph 88 recites a portion of Section 2.2 of the MCA. Counter-Defendants further admit that the term "Confidential Information" is listed in Section 1 of the MCA along with a definition of the term. Counter-Defendants also admit that the title of Section 2 of the MCA recites "Obligations of Confidentiality and Non-Use." Counter-Defendants deny the remaining allegations of paragraph 88.

[redacted]

89. On July 14, 2021, Nippon Shinyaku filed its original Complaint in this action containing confidential information in violation of its agreement, materially breaching its obligations under the MCA, Sections 1-3.

ANSWER: Counter-Defendants admit that Nippon Shinyaku filed its Original Complaint in this action on July 13, 2021. Counter-Defendants deny the remaining allegations of paragraph 89.

90. Notwithstanding that in its first set of Rule 12 responsive motions Sarepta raised its objection to such confidential information appearing in Nippon Shinyaku's original Complaint contrary to the terms of the MCA, Nippon Shinyaku again included the same confidential material in its First Amended Complaint ("FAC"), filed September 10, 2021 (D.I. 39).

ANSWER: Counter-Defendants admit that Nippon Shinyaku filed its First Amended Complaint on September 10, 2021. Counter-Defendants further admit that on September 3, 2021, Sarepta filed a Motion to Dismiss and Motion to Strike certain paragraphs of the Original Complaint. Counter-Defendants deny the remaining allegations of paragraph 90.

91. Sarepta renewed its objection in subsequent Rule 12 responsive motions (D.I. 53, 54) to such confidential information appearing in Nippon Shinyaku's FAC contrary to the terms of the MCA.

ANSWER: Counter-Defendants admit that Sarepta filed a Motion to Dismiss and Motion to Strike Portions of the First Amended Complaint on September 24, 2021. Counter-Defendants deny the remaining allegations of paragraph 91.

92. On December 20, 2021, the Court found that Nippon Shinyaku had violated the confidentiality and non-use provisions of the MCA and struck from the FAC the second sentence of paragraph 2 as well as paragraphs 11, 78, and 91 of the FAC. (Hearing Tr. at 31-34; D.I. 84.)

ANSWER: Counter-Defendants admit that the Court struck the second sentence of paragraph 2 and paragraphs 11, 78, and 91 of the First Amended Complaint. Counter-Defendants deny the remaining allegations of paragraph 92.

93. As the Court found, Nippon Shinyaku "agreed not to hold the parties' confidential communications against Sarepta in future litigation" because the terms of the valid and enforceable MCA had prohibitions against mentioning confidential communications in legal actions. *Id*. at 32, 34. But Nippon Shinyaku materially breached the terms of the agreement by including confidential

[redacted]

information in its original Complaint and again in its FAC, even after being put on notice of its breach, requiring further briefing, motions practice, and a ruling by this Court striking the confidential information from Nippon Shinyaku's pleading.

ANSWER: Counter-Defendants admit that in the Hearing Transcript from the hearing on December 20, 2021, the Court stated that "NS agreed not to hold the parties' confidential communications against Sarepta in future litigation." Counter-Defendants deny the remaining allegations of paragraph 93.

94. Sarepta has suffered prejudice and injury by virtue of Nippon Shinyaku's knowing and repeated bad-faith breaches of the MCA's confidentiality and non-use provisions of Section 2, entitling Sarepta to damages in an amount exceeding $75,000.

ANSWER: Counter-Defendants deny the allegations of paragraph 94.

95. In addition, in view of Nippon Shinyaku's knowing and repeated bad-faith breaches of the MCA, Nippon Shinyaku has unclean hands precluding enforcement of the MCA and depriving it of any entitlement to injunctive or other equitable relief for any alleged breach of the MCA by Sarepta.

ANSWER: Counter-Defendants deny the allegations of paragraph 95.

RESPONSES TO ALLEGATIONS REGARDING COUNTERCLAIM VI
(Declaratory Judgment of Unenforceability of the NS Patents Due to Inequitable Conduct)

96. Sarepta realleges each of the foregoing Paragraphs 1-95 as if fully set forth herein.

ANSWER: Counter-Defendants incorporate by reference their answers to the allegations of paragraphs 1-95 as if fully set forth herein.

97. As set forth below, the NS Patents are unenforceable due to inequitable conduct based on material misrepresentations and omission of material information that occurred during prosecution of the NS Patents at the USPTO. [redacted] intended to deceive the USPTO by: (1) mispresenting that a claimed oligomer exhibited "superior skipping activity" over a prior art oligomer [redacted] and (2) withholding the Sazani paper during prosecution of the NS Patent.

ANSWER: Counter-Defendants deny the allegations of paragraph 97.

[redacted]

98. NS has asserted seven patents against Sarepta in this litigation: U.S. Patent Nos. 9,708,361 ("the '361 patent"); 10,385,092 ("the '092 patent); 10,407,461 ("the '461 patent"); 10,487,106 ("the '106 patent"); 10,647,741 ("the '741 patent"); 10,662,217 ("the '217 patent"); and 10,683,322 ("the '322 patent) (collectively, "the NS Patents").

ANSWER: Counter-Defendants admit the allegations of paragraph 98.

99. The '361 patent stems from U.S. Application No. 14/615,504, filed February 6, 2015. The '504 application was filed as a continuation of U.S. Application No. 13/819,520, which claims priority to International Patent Application No. PCT/JP2011/070318, filed August 31, 2011 ("International PCT Application"). The International PCT Application claims priority to Japanese Application No. 2010-196032, filed September 1, 2010 ("JP Application").

ANSWER: Counter-Defendants admit the allegations of paragraph 99.

100. The '520 application issued as U.S. Patent No. 9,079,934. Ex. AA, Items (10) & (21). Claim 1 of the '934 patent recites:

> 1. An antisense oligomer which causes skipping of the 53rd exon in the human dystrophin gene, consisting of the nucleotide sequence of SEQ ID NO: 35, wherein the antisense oligomer is an oligonucleotide having the sugar moiety and/or the phosphate-binding region of at least one nucleotide constituting the oligonucleotide modified, or a morpholino oligomer.

ANSWER: Counter-Defendants admit that paragraph 100 quotes claim 1 of the '934 patent and admit the remaining allegations of paragraph 100.

101. NS has requested a patent term extension of the '934 patent based on the approved product, VILTEPSO (viltolarsen). *See* Ex. AB. The '934 patent is not asserted against Sarepta in this litigation.

ANSWER: Counter-Defendants admit that the '934 patent is not asserted against Sarepta in this litigation. Exhibit AB is a document that speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

102. Claim 1 of the '361 patent recites:

> An antisense oligomer which causes skipping of the 53rd exon in the human dystrophin gene, consisting of the nucleotide sequence of SEQ ID NO: 57, wherein the antisense oligomer is an oligonucleotide in which the sugar moiety and/or the phosphate-binding region of at least one nucleotide constituting the oligonucleotide is modified, or a morpholino oligomer.

[redacted]

ANSWER: Counter-Defendants admit that paragraph 102 quotes claim 1 of the '361 patent.

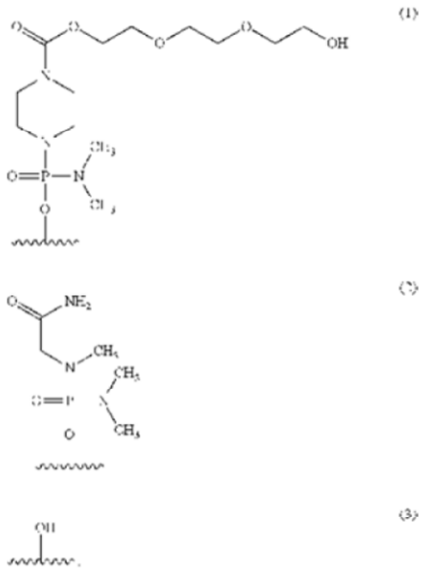
103. Claim 4, which depends from claim 1, recites:

> The antisense oligomer according to claim 1, which is a morpholino oligomer.

ANSWER: Counter-Defendants admit that paragraph 103 quotes dependent claim 4 of the '361 patent.

104. Claim 6, which depends from claim 4, recites:

> The antisense oligomer according to claim 4, wherein the 5' end is any one of the groups of chemical formulae (1) to (3) below:



ANSWER: Counter-Defendants admit that paragraph 104 quotes dependent claim 6 of the '361 patent.

[redacted]

105. Table 7 of the '361 patent indicates that SEQ ID NO: 57 corresponds to an antisense oligomer named "H53_36-60," which is intended to bind positions 36 to 60 of exon 53 of the human dystrophin pre-mRNA ("Exon 53").[7] According to Table 7, the nucleotide sequence of the H53_36-60 oligomer is 5'-GUUGCCUCCGGUUCUGAAGGUGUUC-3'. Table 7 reports the sequences of SEQ ID NOS: 49 to 123.

ANSWER: Table 7 of the '361 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Ex. AY referenced in footnote 7 is a document that speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

106. Above Table 7, the '361 patent states that "[e]xperiments were performed using the antisense oligomers of 2'-O-methoxy-phosphorothioates (2'-OMe-S-RNA) shown by SEQ ID NO: 49 to SEQ ID NO: 123." Ex. AC, 40:24-26. Below Table 7, the '361 patent further states that "[c]omplexes of various antisense oligomers (Japan Bio Services) (1 μM) for exon 53 skipping and Lipofectamine 2000 (manufactured by Invitrogen Corp.) were prepared and 200 μl was added to RD cells. . . to reach the final concentration of 100 nM." *Id*., 42:38-43. "The results are shown in FIGS. 9 to 17." *Id.*, 43:39.

ANSWER: Counter-Defendants admit that paragraph 106 quotes portions of the '361 patent.

107. Claim 1 of the '361 patent is generally directed to antisense oligomers (e.g., morpholino oligomers also known as "PMOs") that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '361 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

108. The '092 patent stems from U.S. Application No. 16/359,213, filed March 20, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '092 patent recites:

> 1. A phosphorodiamidate morpholino oligomer (PMO) antisense oligomer that causes skipping of the 53rd exon in a human dystrophin pre-mRNA, consisting of a 25-mer oligomer that is 100% complementary to the 36th to the 60th nucleotides from the 5' end of the 53rd exon in said human dystrophin pre-mRNA, wherein the 53rd exon in said human dystrophin pre-mRNA consists of a

7 [redacted]

[redacted]

> nucleotide sequence corresponding to SEQ ID NO: 1, and wherein said PMO antisense oligomer hybridizes to said pre-mRNA with Watson-Crick base pairing under physiological conditions.

ANSWER: Counter-Defendants admit that paragraph 108 quotes claim 1 of the '092 patent and admit the other allegations of paragraph 108.

109. Claim 1 of the '092 patent is generally directed to PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '092 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

110. The '461 patent stems from U.S. Application No. 16/364,451, filed March 26, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '461 patent recites:

> 1. A phosphorodiamidate morpholino oligomer (PMO) antisense oligomer that causes skipping of the 53rd exon in a human dystrophin pre-mRNA, consisting of a 25-mer oligomer that is 100% complementary to the target sequence 5'-GAACACCUUCAGAACCGGAGGCAAC-3' (SEQ ID NO: 124) of said human dystrophin pre-mRNA, wherein said PMO antisense oligomer hybridizes to said target sequence with Watson-Crick base pairing under physiological conditions, wherein each phosphorodiamidate morpholino monomer of said PMO antisense oligomer has the formula:

ANSWER: Counter-Defendants admit that paragraph 110 quotes claim 1 of the '461 patent and admit the other allegations of this paragraph.

111. The target sequence 5'-GAACACCUUCAGAACCGGAGGCAAC-3' (SEQ ID NO: 124) recited in claim 1 of the '461 patent corresponds to positions 36 to 60 of exon 53 of the human dystrophin pre-mRNA.

ANSWER: Claim 1 of the '461 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

[redacted]

112. Claim 1 of the '461 patent is generally directed to PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '461 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

113. The '106 patent stems from U.S. Application No. 16/369,427, filed March 29, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '106 patent recites:

> 1. A phosphorodiamidate morpholino oligomer (PMO) consisting of a 25-mer antisense oligomer that is 100% complementary, according to Watson-Crick base pairing, to the 36^{th} to the 60^{th} nucleotides from the 5' end of the 53^{rd} exon in a human dystrophin pre-mRNA, wherein the 53^{rd} exon in said human dystrophin pre-mRNA consists of a nucleotide sequence corresponding to SEQ ID NO: 1, wherein each phosphorodiamidate morpholino monomer of said PMO has the formula:

ANSWER: Counter-Defendants admit that paragraph 113 quotes claim 1 of the '106 patent and admit the other allegations of paragraph 113.

114. Claim 1 of the '106 patent is generally directed to PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '106 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

115. The '741 patent stems from U.S. Application No. 16/449,537, filed June 24, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '741 patent recites:

> 1. A method comprising administering to a patient with DMD an antisense phosphorodiamidate morpholino oligomer (PMO) consisting of a 25-mer oligomer that is 100% complementary to the 36^{th} to the 60^{th} nucleotides from the 5' end of the 53^{rd} exon in a human dystrophin pre-mRNA, wherein the 53^{rd} exon in said human dystrophin pre-mRNA consists of a nucleotide sequence corresponding to SEQ ID NO: 1, wherein said PMO hybridizes to said human dystrophin pre-mRNA with Watson-Crick base pairing, and wherein skipping of the 53^{rd} exon is induced in said patient.

[redacted]

ANSWER: Counter-Defendants admit that paragraph 115 quotes claim 1 of the '741 patent and admit the other allegations of this paragraph.

116. Claim 1 of the '106 patent is generally directed to a method of using PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '106 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

117. The '217 patent stems from U.S. Application No. 16/712,686, filed December 12, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '217 patent recites:

> 1. A method of treating a DMD patient comprising intravenously administering to said patient an oligomer comprising:
>
> a) a phosphorodiamidate morpholino oligomer (PMO) that is 100% complementary to the 36th to the 60th nucleotides from the 5' end of the 53rd exon in a human dystrophin pre-mRNA, wherein the 53rd exon in said human dystrophin pre-mRNA consists of a nucleotide sequence corresponding to SEQ ID NO: 1, wherein said PMO hybridizes to said human dystrophin pre-mRNA with Watson-Crick base pairing, wherein the phosphorodiamidate morpholino monomers of said PMO have the formula:

ANSWER: Counter-Defendants admit that paragraph 117 quotes claim 1 of the '271 patent and admit the other allegations of this paragraph.

118. Claim 1 of the '217 patent is generally directed to a method of using PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '217 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

119. The '322 patent stems from U.S. Application No. 16/717,274, filed December 17, 2019. It claims priority to the '361 patent, which in turn claims priority to the International PCT Application and the JP Application. Claim 1 of the '322 patent recites:

> 1. A solid-phase method of making an oligomer comprising a phosphorodiamidate morpholino oligomer (PMO) and a group at the 5' end of said PMO, wherein said PMO is 100% complementary to the 36th to the 60th nucleotides from the 5' end of the 53rd exon in a human dystrophin pre-mRNA, wherein the 53rd exon in said human

[redacted]

> dystrophin pre-mRNA consists of a nucleotide sequence corresponding to SEQ ID NO: 1, wherein said PMO hybridizes to said human dystrophin pre-mRNA with Watson-Crick base pairing, wherein the phosphorodiamidate morpholino monomers of said PMO have the formula:

ANSWER: Counter-Defendants admit that paragraph 119 quotes claim 1 of the '322 patent and admit the other allegations of this paragraph.

120. Claim 1 of the '322 patent is generally directed to a method of making PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the '322 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

121. The claims of the NS Patents encompass PMOs that are intended to bind positions 36 to 60 of Exon 53, or methods for making or using those PMOs.

ANSWER: The claims of the NS patents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

122. The International PCT Application was published as WO 2012/029986 on March 8, 2012. Ex. AD, Items (10) & (43); *see also* Ex. AE, Items (10) & (43). The specification of the International PCT Application is substantially the same as the specification of each of the NS Patents.

ANSWER: Counter-Defendants admit that the International PCT Application was published as WO 2012/029986 on March 8, 2012. The referenced specifications speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

123. Table 7 is the only place in the text of the International PCT Application where the H53_36-60 oligomer and its corresponding nucleotide sequence (SEQ ID NO: 57) are disclosed. Figures 9, 13, 16, and 17 are the only places in the International PCT Application reporting skipping efficiencies (%) for the H53_36-60 oligomer.

ANSWER: The referenced International PCT Application speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

124. Except for Table 7 and Figures 9, 13, 16, and 17, the International PCT Application does not disclose the H53_36-60 oligomer or its corresponding nucleotide sequence (SEQ ID NO: 57). Except for the H53_36-60 oligomer and its corresponding nucleotide sequence (SEQ ID NO:

[redacted]

57), the International PCT Application does not disclose any oligomer or its corresponding nucleotide sequence that is 25 bases in length and intended to target positions 36 to 60 of Exon 53.

ANSWER: The referenced International PCT Application speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

125. The JP Application does not include Table 7 of the International PCT Application. *See generally* Ex. AG; *see also* Ex. AH. The JP Application also does not include Figures 9 through 17 of the International PCT Application. *See id.* The JP Application does not disclose any oligomer or its corresponding nucleotide sequence that is 25 bases in length and is intended to target positions 36 to 60 of Exon 53. *See id.*

ANSWER: The referenced JP Application speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

II. Responses to Allegations Regarding NS's Patent Activities

126. U.S. Application No. 14/615,504 ("'504 application"), which became the '361 patent, was filed on February 6, 2015. The Utility Patent Application Transmittal for filing the '504 application was signed by Mr. Zhengyu Feng. Ex. AI, NS00000478.

ANSWER: Counter-Defendants admit the allegations of paragraph 126.

127. On February 6, 2015, a First Preliminary Amendment was filed with the USPTO. The First Amendment included one independent claim (claim 1), directed to "[a]n antisense oligomer . . . consisting of a nucleotide sequence complementary to any one of the sequences consisting of the 32nd to the 56th or the 36th to the 56th nucleotides from the 5' end of the 53rd exon in the human dystrophin gene." Ex. AI, NS00000578-581. Mr. Zhengyu Feng signed the First Amendment. *Id.*

ANSWER: Counter-Defendants admit the allegations of paragraph 127.

128. On February 6, 2015, the signed copy of Mr. Naoki Watanabe's inventor oath was also filed. Ex. AI, NS00000564, -592-595. The copy was signed by Mr. Naoki Watanabe on November 26, 2014. *Id*. In the oath, Mr. Watanabe declared: the attached application "was made or authorized to be made by me." *Id.*

ANSWER: Counter-Defendants admit the allegations of paragraph 128.

129. On the same day, an Application Data Sheet was filed, identifying each of Nippon Shinyaku Co., Ltd. and National Center of Neurology and Psychiatry as "Applicant." Ex. AI, NS00000568-575.

ANSWER: Counter-Defendants admit the allegations of paragraph 129.

[redacted]

130. On February 9, 2015, a Second Preliminary Amendment was filed with the USPTO. The Second Amendment included one independent claim (claim 1), directed to "[a]n antisense oligomer . . . consisting of a nucleotide sequence complementary to any one of the sequences consisting of: the 31st to the 55th, the 32nd to the 53rd, the 32nd to the 56th, the 32nd to the 61st, the 33rd to the 54th, the 33rd to the 57th, the 34th to the 58th, the 35th to the 59th, the 36th to the 53rd, the 36th to the 55th, the 36th to the 57th, the 36th to the 60th, or the 37th to the 61st nucleotides from the 5' end of the 53rd exon in the human dystrophin gene." Ex. AI, NS00000601-605. Mr. Zhengyu Feng signed the Second Amendment. *Id.*

ANSWER: Counter-Defendants admit the allegations of paragraph 130.

131. On February 9, 2015, two copies of Power of Attorney, one from Yoshiaki Shirouchi at Nippon Shinyaku Co., Ltd. and the other from Teruhiko Higuchi at National Center of Neurology and Psychiatry, were filed. Ex. AI, NS00000609-616. The transmittal letters for both copies were signed by Mr. Zhengyu Feng. *Id*.

ANSWER: Counter-Defendants admit the allegations of paragraph 131.

132. On March 25, 2016, the USPTO mailed a Non-Final Office Action. Ex. AI, NS00000736-747. In it, the Examiner rejected claim 1 and other dependent claims as "being unpatentable over," *inter alia*, Popplewell et al., U.S. Patent Publication No. 2010/0168212 ("'212 publication") and Sazani et al., U.S. Patent Publication No. 2010/0130591 ("'591 publication"). The Examiner stated: "The prior art has therefore taught that the same region targeted by the instantly claimed oligomers is superior to other regions of exon 53. The prior art has taught that sequences with SEQ ID NOS: 10-12 are included in their invention. The recited SEQ ID NOS: fall squally within SEQ ID NOS: 10-12 and 24 which have been taught by Popplewell to be a 'superior' target region of exon 53." *Id*., NS00000742. As reproduced by the Examiner, the '212 publication discloses "the sequence +30+59 (PMO-G, or h53A30/1)." *Id.*; *see also* Ex. AX, ¶[0097].

ANSWER: Counter-Defendants admit only that paragraph 132 quotes from a portion of Ex. AI. Upon information and belief, Counter-Defendants admit that the Non-Final Office Action was mailed on March 25, 2016. The referenced document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

133. On July 22, 2016, a Response to Non-Final Office Action, signed by Mr. Zhengyu Feng, was filed. Ex. AI, NS00000753-763. In the Response, Applicants amended claim 1 to recite: "[a]n antisense oligomer . . . consisting of the nucleotide sequence of SEQ ID NO: 11 and SEQ ID NO: 57, wherein the antisense oligomer is an oligonucleotide in which the sugar moiety and/or the phosphate-binding region of at least one nucleotide constituting the oligonucleotide is modified, or a morpholino oligomer." *Id*., NS00000756.

ANSWER: Counter-Defendants admit that that paragraph 133 quotes from a portion of Ex. AI. Counter-Defendants further admit that the Response to Non-Final Office Action was

[redacted]

signed by Mr. Zhengyu and filed on July 22, 2016. The referenced document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

134. In the Response, Applicants stated: "the presently recited oligomers (consisting of the nucleotide sequence of SEQ ID NO: 11 and 57) offer superior skipping effects over the oligomers taught in" the '212 publication and the '591 publication. Ex. AI, NS00000761. Applicants further stated: "the recited oligomers consisting of the nucleotide sequence of SEQ ID NO: 57 also have superior skipping activity over exemplary oligomers taught in" those publications. *Id.*

ANSWER: Counter-Defendants admit that paragraph 134 quotes from a portion of Ex. AI.

135. On October 27, 2016, the USPTO mailed a Final Office Action. Ex. AI, NS00000772-784. The Examiner maintained the rejection over the '212 publication and the '591 publication. *Id*. The Examiner reiterated: "The prior art has therefore taught that the same region targeted by the instantly claimed oligomers is superior to other regions of exon 53. The prior art has taught that sequences with SEQ ID NOS:10-12 are included in their invention. The recited SEQ ID NOS: fall squarely within SEQ ID NOS:10-12 and 24 which has been taught by Popplewell to be a 'superior' target region of exon 53." *Id*., NS00000782.

ANSWER: Counter-Defendants admit that paragraph 135 quotes from a portion of Exhibit AI. On information and belief, Counter-Defendants admit that the USPTO mailed the Final Office Action on October 27, 2016. The referenced document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

136. On February 27, 2017, a Response to Final Office Action, signed by Mr. Zhengyu Feng, was filed. In the Response, Applicants amended claim 1 to recite: "[a]n antisense oligomer ... consisting of the nucleotide sequence of SEQ ID NO: 57, wherein the antisense oligomer is an oligonucleotide in which the sugar moiety and/or the phosphate-binding region of at least one nucleotide constituting the oligonucleotide is modified, or a morpholino oligomer." *Id*., NS00000788.

ANSWER: Counter-Defendants admit the allegations of paragraph 136.

137. In the Response, Applicants stated: "Figures 2-4 of the Specification. . . show that PMO No. 3 (having the nucleotide sequence of SEQ ID NO: 11; *see* Table 2) outperformed exemplary antisense oligomers taught in Popplewell (PMO Nos. 12 and 15). As shown in TABLE 2, PMO Nos. 12 and 15 corresponds to the top performer taught in Popplewell (targeting sequence 30-59 of exon 53). . . . Figures 16-17 .. . show that the oligomer having the nucleotide sequence of SEQ ID NO: 57 (H53_36-60) displays a higher level skipping activity [than] that having the nucleotide sequence of SEQ ID NO: 11 (H53_32-56)." *Id.*, NS00000793.

[redacted]

ANSWER: Counter-Defendants admit that paragraph 137 selectively quotes from a portion of Exhibit AI.

138. Applicants also stated: "the recited oligomers consisting of the nucleotide sequence of SEQ ID NO: 57 also have superior skipping activity over exemplary oligomers taught in" those publications, "particularly the top performer taught in Popplewell." *Id.* Applicants further stated: "this superiority is unexpected, at least because none of the cited references teach or suggest such an effect." *Id.*

ANSWER: Counter-Defendants admit that paragraph 138 selectively quotes from a portion of Exhibit AI.

139. On June 12, 2017, the USPTO mailed a Notice of Allowance. Ex. AI, NS00000803-808. On July 18, 2017, the '504 application issued as the '361 patent. *Id*., NS00000825.

ANSWER: On information and belief, Counter-Defendants admit the allegations in the first sentence of paragraph 139. Counter-Defendants admit the allegations in the second sentence of paragraph 139.

140. Each of the '092, '461, '106, '741, '217, and '322 patents issued after the '361 patent issued. During prosecution of each of the '092, '461, '106, '741, '217, and '322 patents, the USPTO did not raise any rejection under 35 U.S.C. § 102. The USPTO also did not raise any rejection under 35 U.S.C. § 103 before the issuance of each of the '092, '461, '106, '741, '217, and '322 patents.

ANSWER: Counter-Defendants admit the allegations of paragraph 140.

141. European Patent No. 3018211 ("EP '211 Patent") is a divisional of European Patent No. 2612917 ("EP '917 Patent"). Ex. AO, Item (62). The EP '917 Patent claims priority to the International PCT Application, which in turn claims priority to the JP Application. Ex. AN, Items (86) & (30). As such, the EP '211 Patent shares a priority claim to the International PCT Application with the NS Patents.

ANSWER: Counter-Defendants admit the allegations of paragraph 141.

[redacted]

142. Claim 1 of the EP ’211 Patent recites:

> An antisense oligomer which causes skipping of the 53rd exon in the human dystrophin gene, consisting of a nucleotide sequence complementary to the 36th to the 60th nucleotides from the 5' end of the 53rd exon in the human dystrophin gene.

ANSWER: Counter-Defendants admit that paragraph 142 quotes from claim 1 of the EP ’211 patent.

143. Claim 1 of the EP ’211 Patent is generally directed to antisense oligomers (e.g., PMOs) that are intended to target positions 36 to 60 of Exon 53. As such, the claims of the EP ’211 Patent share common features with the claims of the NS Patents, i.e., both sets of claims encompass PMOs that are intended to target positions 36 to 60 of Exon 53.

ANSWER: Claim 1 of the EP ’211 patent speaks for itself, and, thus, Counter-Defendants deny Sarepta’s characterizations thereof.

144. The EP ’211 Patent stems from European Application No. 15199455.5, filed December 11, 2015. Ex. AP, SRPT-VYDS-0223778-83. It was filed with one independent claim (claim 1), which recited: “[a]n antisense oligomer . . . consisting of a nucleotide sequence complementary to any one of the sequences consisting of: the 31st to the 55th, the 32nd to the 53rd, the 32nd to the 61st, the 33rd to the 54th, the 33rd to the 57th, the 34th to the 58th, the 35th to the 59th, the 36th to the 53rd, the 36th to the 55th, the 36th to the 57th, the 36th to the 60th, or the 37th to the 61st nucleotides from the 5' end of the 53rd exon in the human dystrophin gene.” *Id*., SRPT-VYDS-0225739.

ANSWER: Counter-Defendants admit that paragraph 144 quotes from independent claim 1 of the EP ’211 patent, which stems from European Application No. 15199455.5, filed December 11, 2015.

145. On March 16, 2016, the European Patent Office issued a European Search Opinion. *Id*., SRPT-VYDS-0225507-08. The Examiner cited Popplewell, L.J., *Comparative Analysis of Antisense Oligonucleotide Sequences Targeting Exon 53 of the Human DMD Gene: Implications for Future Clinical Trials*, Neuromuscular Disorders 20:102–110 (2010) (“Popplewell paper”) as “D1.” *Id.* The Examiner stated: “The H53A30/1 variant is considered the closest and has extensive overlap with the claimed sequences. . . . The technical effect of this difference is unknown as comparative data is not present for all claimed sequences.” *Id*. The “H53A30/1 variant” in the Popplewell paper corresponds to PMO-G. Ex. AW, Table 1(a).

[redacted]

ANSWER: Counter-Defendants admit that paragraph 145 selectively quotes from the European Search Opinion dated March 16, 2016. The cited document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

146. On November 10, 2016, a Response to the European Search Opinion was filed. In the Response, claim 1 was amended to recite: "[a]n antisense oligomer . . . consisting of a nucleotide sequence complementary to the 36th to the 60th nucleotides from 5' end of the 53rd exon in the human dystrophin gene." Ex. AP, SRPT-VYDS-02262032. In the Response, Applicants explained that Table 2 of the specification discloses PMO Nos. 12 and 15, each of which "corresponds to H53A30/1 as disclosed in" the Popplewell paper. *Id*., SRPT-VYDS-0226292-93. Applicants further stated: "In Figures 2 and 3 of the present application it is shown that SEQ ID NO: 11 corresponding to H53_32-56 (SEQ ID NO: 11) corresponding to PMO No. 3 has a higher activity than the oligomer disclosed by Popplewell et al. Furthermore, H53_36-60 (SEQ ID NO: 57) has a higher skipping activity than H53_32-56 (SEQ ID NO: 11) as shown in Figures 16 and 17. From the above explanations it is clear that H53_36-60 (SEQ ID NO: 57) has higher skipping activities than the best oligomer disclosed by Popplewell et al." *Id.* The substance of this argument is identical to that of the "superiority" arguments that Nippon Shinyaku advanced during prosecution of the '361 patent in front of the USPTO. *See supra* ¶¶126-40.

ANSWER: Counter-Defendants admit that paragraph 146 selectively quotes from a Response to European Search Opinion dated November 10, 2016. The cited document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

147. On February 9, 2017, the Examining Division issued a Communication, stating that in the Examiner's view, "[t]he H53A30/2," which is designated as PMO-H in the Popplewell paper, "is considered the closest in sequence and comprises the claimed smaller oligonucleotide." Ex. AP, SRPT-VYDS-0223945-946; Ex. AW, Table 1(a). On September 8, 2017, the Examining Division also requested "supportive data showing an improved activity." Ex. AP, SRPT-VYDS-0225851-82.

ANSWER: Counter-Defendants admit that on February 9, 2017, the Examining Division issued the referenced communication and made a request on September 8, 2017, both of which are selectively quoted in paragraph 147. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

[redacted]

148. On March 16, 2018, a Response to the Communication was filed. The Response also included an "Experimental Report," in which three oligomers, "H53_36-60," "H53_33-62," and "H53_36-56," were evaluated. *Id*., SRPT-VYDS-0224892-83; Ex. BQ. An excerpt from the Experimental Report is provided below:

> **H53_36-60:** 5′- GTTGCCTCCGGTTCTGAAGGTGTTC -3′; corresponding to SEQ ID NO: 57 of the present application, and complementary to the 36th to the 60th nucleotides from the 5′ end of the human dystrophin gene's 53rd exon; and
> **H53_33-62:** 5′- CTGTTGCCTCCGGTTCTGAAGGTGTTCTTG-3′; corresponding to H53A30/2 of D1, and complementary to the 33rd to the 62nd nucleotides from the 5′- end of the human dystrophin gene's 53rd exon.
> **H53_36-56:** 5′- CCTCCGGTTCTGAAGGTGTTC -3′; corresponding to SEQ ID NO: 35 of the present application, and complementary to the 36th to the 56th nucleotides from the 5′ end of the human dystrophin gene's 53rd exon; and
>
> The skipping efficiencies of H53_36-60 and H53_33-62 were measured in separate *in vitro* experiments but both experiments included H53_36-56 as control. Briefly, 10 μM of

ANSWER: Counter-Defendants admit that a Response to Communication was filed on March 16, 2018 that included an Experimental Report, which Sarepta selectively quotes in paragraph 148. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

149. The Experimental Report further provides results from Experiment 1 and Experiment 2 as shown below (Ex. BQ, 2):

(2) Results

Experiment 1

Sequences	Concentration (μM)	Repeat number	Skipping efficiency(%)	
			Mean	Standard deviation
H53_36-60	10	3	45.5	10.9
H53_36-56	10	3	68.0	1.9

Experiment 2

Sequences	Concentration (μM)	Repeat number	Skipping efficiency(%)	
			Mean	Standard deviation
H53_33-62	10	3	32.7	4.5
H53_36-56	10	3	76.2	8.0

[redacted]

ANSWER: Counter-Defendants admit that paragraph 149 quotes from the referenced Experimental Report. The cited document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

150. Based on these results, the Experimental Report concluded: "H53_36-60 showed higher skipping efficiency in experiment 1 than H53_33-62 did in experiment 2, although control sequence of H53_36-56 showed lower skipping efficiency in test 1 than in test 2. Thus, the presently claimed oligomer H53_36-60 has superior skipping activity over H53A30/2" i.e., PMO-H in the Popplewell paper. *Id*.

ANSWER: Counter-Defendants admit that paragraph 150 quotes from the referenced Experimental Report. The cited document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

151. On April 12, 2018, the Examining Division issued a Communication noting that "[t]he claims are allowable." Ex. AP, SRTP-VYDS-0225280. On July 11, 2019, the Examining Division issued a Decision to grant a European Patent. *Id*., SRPT-VYDS-0223991-93. On August 19, 2019, the Certificate for a European patent was transmitted. *Id*., SRPT-VYDS-0226522.

ANSWER: The documents cited in paragraph 151 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

152. On May 6, 2020, Sarepta filed a Notice of Opposition, requesting the revocation of EP '211 Patent. *Id*., SRPT-VYDS-0225302-326. On May 7, 2020, James Poole Limited also filed a Notice of Opposition, requesting the revocation of the EP '211 Patent. *Id*., SRPT-VYDS-0223972-989.

ANSWER: Counter-Defendants admit that the Notice of Oppositions were filed on the dates listed. These Notices of Oppositions cited in paragraph 152 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

153. On October 27, 2020, Nippon Shinyaku submitted the "Declaration of Toshihiro Ueda," signed by Mr. Toshihiro Ueda on September 29, 2020 ("Mr. Ueda's declaration"), in the EP '211 Patent. Ex. BQ, 3 (D15). Mr. Ueda declared: "I am the person that supervised and was responsible for the experiments in the 'Experimental Report' that was filed during the examination phase of" the EP '211 Patent on March 16, 2018 ("Mr. Ueda's Experimental Report" hereafter). *Id*.

[redacted]

ANSWER: Counter-Defendants admit only that paragraph 153 quotes from the Ex. BQ, which is dated September 29, 2020, and which was submitted on October 27, 2020. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

154. On January 21, 2022, NS filed a Request for Revocation of Patent, declaring that "[t]he Patent Proprietor no longer approves of the text in which the above-mentioned patent was granted and will not submit an amended text." Ex. AP, SRPT-VYDS-0226797. On January 31, 2022, the European Patent Office issued a Decision revoking the EP '211 Patent. *Id*., SRPT-VYDS-0226351-52.

ANSWER: Counter-Defendants admit only that paragraph 154 quotes from Exhibit AP, which was filed on January 21, 2022. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof are denied.

155. A copy of Mr. Ueda's Experimental Report was submitted to the USPTO on July 6, 2021 during prosecution of U.S. Application No. 17/126,366, which claims priority to, *inter alia*, the '361 patent and the International PCT Application. Ex. AM, 1; *id*., 8 (Cite No. AC: "Experimental Report submitted March 16, 2018 in EP 3018211"). The transmittal letter for submission was signed by Mr. Zhengyu Feng. *Id.*, 13.

ANSWER: Counter-Defendants admit only that a copy of Mr. Udea's Experimental Report was submitted to the USPTO on July 6, 2021 in connection with prosecution of U.S. Application No. 17/126,366 and that the transmittal letter for this submission was signed by Mr. Feng. Counter-Defendants further admit that U.S. Application No. 17/126,366, claims priority to the '361 patent and the International PCT Application. Counter-Defendants deny the remaining allegation of paragraph 155 pertaining to claiming priority to unidentified patents.

[redacted]

156. A copy of Mr. Ueda's declaration was submitted to the USPTO on February 21, 2021 during prosecution of U.S. Application No. 17/175,276, which claims priority to, *inter alia*, the '361 patent and the International PCT Application. Ex. AL, Item (63); Ex. AK, 25 (Cite No. ER: "Declaration by Toshihiro Ueda submitted in Opposition Proceeding of EP 3018211, dated September 29, 2020, submitted October 27, 2020"). The transmittal letter for submission was signed by Mr. Zhengyu Feng. Ex. AK, 28. The '276 application issued as U.S. Patent No. 11,028,122 on June 8, 2021. Ex. AL, Item (45).

ANSWER: Counter-Defendants admit only that a copy of Mr. Udea's declaration was submitted to the USPTO on February 21, 2021 in connection with prosecution of U.S. Application No. 17/175,276, that the transmittal letter for this submission was signed by Mr. Feng, and that the '276 application issued as U.S. Patent No. 11,028,122 on June 8, 2021. Counter-Defendants further admit that U.S. Application No. 17/126,366, claims priority to the '361 patent and the International PCT Application. Counter-Defendants deny the remaining allegation of paragraph 156 pertaining to claiming priority to unidentified patents.

157. Japanese Patent No. 6193343 ("JP '343 Patent") shares a priority claim with the NS Patents. *See* Ex. AQ, Item (62). Like the NS Patents, claim 1 of the JP '343 Patent also encompasses oligomers targeting positions 36 to 60 of Exon 53[8]:

> An antisense oligomer that enables skipping of the 53rd exon of the human dystrophin gene, which is complementary to a sequence consisting of nucleotides 36 to 60 from the 5' end of the 53rd exon of the human dystrophin gene.

ANSWER: Counter-Defendants admit only that paragraph 157 quotes from claim 1 of the JP '343 Patent. The cited '343 Patent and Ex. AQ speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

158. Before this patent issued, the last response to office action was submitted by Hiroshi Kobayashi (representative patent attorney) on March 9, 2017. Ex. AR, 1; *see also id*., 7. Hiroshi Kobayashi is an attorney at a law firm known as Abe, Ikubo, and Katayama ("AIK"). The response advanced arguments similar to those presented at the USPTO. Specifically, the response stated that "it is shown that PMO-G (the 30-59th) has the highest activity" in a cited prior art reference. Ex. AR, 3; *see also id*., 9. Comparing Figures 3 and 16 of the specification, the response further stated that "it turns out that oligomer of the present invention is highly active than PMO-G" of the

[8] Machine translated.

[redacted]

cited prior art reference. Ex. AR, 5; *see also id*., 11. On July 11, 2017, the Japanese Patent Office issued a Decision to Grant. Ex. AR, 13-15; *see also id*., 16-17.

ANSWER: Counter-Defendants admit only that paragraph 158 quotes from Exhibit AR and that Hiroshi Kobayashi is an attorney at a law firm known as Abe, Ikubo, and Katayama. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

159. The response filed on March 9, 2017 omitted [redacted]

ANSWER: The cited document speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

160. European Patent No. 2206781 ("EP '781 Patent") is a divisional of European Patent No. 1766010 ("EP '010 Patent"). Ex. AT, Item (62). EP '010 Patent claims priority to International Patent Application No. PCT/AU2005/000943, which published as International Patent Publication No. WO 2006/000057. Ex. AS, Items (86) & (87). The EP '781 Patent shares a priority claim with the UWA Patents, which also claim priority to International Patent Application No. PCT/AU2005/000943. *See* D.I. 89-1, Exhibits A-C, Item (63).

ANSWER: Counter-Defendants admit the allegations of paragraph 160.

161. Claim 1 of EP '781 Patent recites:

> An isolated antisense oligonucleotide that binds to human dystrophin pre-mRNA wherein said oligonucleotide is 20 to 31 nucleotides in length and is an oligonucleotide that is specifically hybridizable to an exon 53 target region of the Dystrophin gene designated as annealing site H53A (+23+47), annealing site H53A (+39+69), or both,
>
> wherein said antisense oligonucleotide is a morpholino antisense oligonucleotide, and,
>
> wherein said oligonucleotide induces exon 53 skipping.

ANSWER: Counter-Defendants admit that paragraph 161 quotes from claim 1 of the EP '781 patent.

[redacted]

162. On August 25, 2016, NS filed a Notice of Opposition, asserting, *inter alia*, that "the alleged superior activity as argued by the patentee in the examination stage is not obtainable over the whole scope of the claim." Ex. AU, 14. NS also submitted D8 as support. *Id*.

ANSWER: Counter-Defendants admit the allegations of paragraph 162. The cited documents speak for themselves.

163. D8 is an "Experimental Report" [redacted] ("Mr. Watanabe's First Declaration"). Ex. BN; [redacted] Mr. Watanabe signed this Experimental Report on August 15, 2016, attesting that "the experiments have been performed under my supervision." Ex. BN, 3. In his First Declaration, Mr. Watanabe tested three PMOs, as summarized in Table 1 of the Experimental Report and reproduced as below (*id.*, 1):

Table 1

Target sequence in exon 53	Complementary nucleotide sequence	SEQ ID NO:
45–62	5'-CTGTTGCCTCCGGTTCTG-3'	SEQ ID NO: 1
49–69	5'-CATTCAACTGTTGCCTCCGGT-3'	SEQ ID NO: 2
50–69	5'-CATTCAACTGTTGCCTCCGG-3'	SEQ ID NO: 3

ANSWER: Counter-Defendants admit only that paragraph 163 quotes from the cited documents. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof are denied.

164. In Mr. Watanabe's First Declaration, he provides the following results from the three tested PMOs (*id*, 3):

Skipping efficiency

Concentration (μM)		3	10	30
SEQ ID NO: 1	45-62	0.2 ± 0.3	5.9 ± 1.3	15.1 ± 10.9
SEQ ID NO: 2	49-69	0.6 ± 0.3	2.0 ± 0.5	5.5 ± 2.0
SEQ ID NO: 3	50-69	1.4 ± 1.1	3.0 ± 3.4	7.1 ± 3.0

mean ± S.D.

ANSWER: Counter-Defendants admit only that Mr. Watanabe's First Declaration contains the table produced at paragraph 164. The cited declaration speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

[redacted]

165. Based on these results, Mr. Watanabe concluded: "Since the activity of the various oligonucleotides differs substantially it is evident that the invention cannot be worked successfully over the whole scope of the claim." *Id*, 3.

ANSWER: Counter-Defendants admit only that paragraph 165 quotes from Mr. Watanabe's First Declaration. The cited declaration speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

166. On September 29, 2017, NS submitted a response to the summons to attend oral proceedings. Ex. AU, 16-33. With its response, NS also submitted D8-1, "an amended version of D8." *Id*., 30.

ANSWER: Counter-Defendants admit the allegations of paragraph 166. The cited documents speak for themselves.

167. D8-1 is an "Experimental Report" [redacted] ("Mr. Watanabe's Second Declaration"). Ex. BO; [redacted] Mr. Watanabe signed this Experimental Report on September 26, 2017, attesting that "the experiments have been performed under my supervision." Ex. BO, 4. In his Second Declaration, Mr. Watanabe tested four PMOs, as summarized in Table 1 of the Experimental Report and reproduced as below (*id.*, 1):

Table 1

Target sequence in exon 53	Complementary nucleotide sequence	SEQ ID NOs:
45–62	5'-CTGTTGCCTCCGGTTCTG-3'	SEQ ID NO: 1
49–69	5'-CATTCAACTGTTGCCTCCGGT-3'	SEQ ID NO: 2
50–69	5'-CATTCAACTGTTGCCTCCGG-3'	SEQ ID NO: 3
39-69	5'-CATTCAACTGTTGCCTCCGGTTCTGAAGGTG-3'	SEQ ID NO: 4

ANSWER: Counter-Defendants admit only that paragraph 167 quotes from the cited documents. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

[redacted]

168. In Mr. Watanabe's Second Declaration, he provides the following results from the four tested PMOs (Ex. BO, 3):

% Skipping efficiency

Concentration (μM)		10	30
SEQ ID NO: 1	45-62	5.9 ± 1.3	15.1 ± 10.9
SEQ ID NO: 2	49-69	2.0 ± 0.5	5.5 ± 2.0
SEQ ID NO: 3	50-69	3.0 ± 3.4	7.1 ± 3.0
SEQ ID NO: 4	39-69	18.3 ± 3.6	24.7 ± 4.4

mean ± S.D.

ANSWER: Counter-Defendants admit only that paragraph 168 reproduces a table from Mr. Watanabe's Second Declaration. The cited declaration speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

169. Based on these results, Mr. Watanabe concluded: "Since the activity of the various oligonucleotides differs substantially it is evident that the invention cannot be worked successfully over the whole scope of the claim." *Id.*

ANSWER: Counter-Defendants admit only that Sarepta quotes from Mr. Watanabe's Second Declaration. The cited declaration speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

170. On September 29, 2017 when NS submitted a response to the summons to attend oral proceedings, NS also submitted D13, "another experimental report." Ex. AU, 31. D13 is an "Experimental Report" from Mr. Toshihiro Tone ("Mr. Tone's Declaration"). Ex. BQ. In D13, Mr. Tone attests that "the experiments have been performed under my supervision." *Id.*, 3. In D13, Mr. Tone stated that he tested the following PMOs (*id.*, 1):

Table 1

Target sequence in exon 53	Complementary nucleotide sequence	SEQ ID NOs.
45-62	5'-CTGTTGCCTCCGGTTCTG-3'	SEQ ID NO: 1
39-69	5'-CATTCAACTGTTGCCTCCGGTTCTGAAGGTG-3'	SEQ ID NO: 4
48-69	5'-CATTCAACTGTTGCCTCCGGTT-3'	SEQ ID NO: 5
47-68	5'-ATTCAACTGTTGCCTCCGGTTC-3'	SEQ ID NO: 6
48-68	5'-ATTCAACTGTTGCCTCCGGTT-3'	SEQ ID NO: 7
47-67	5'-TTCAACTGTTGCCTCCGGTTC-3'	SEQ ID NO: 8
49-68	5'-ATTCAACTGTTGCCTCCGGT-3'	SEQ ID NO: 9
48-67	5'-TTCAACTGTTGCCTCCGGTT-3'	SEQ ID NO: 10

[redacted]

ANSWER: Counter-Defendants admit only that the referenced documents were submitted on September 29, 2017 and the paragraph 170 reproduces a table from Exhibit BQ. The cited declaration and documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

171. Copies of Mr. Watanabe's First and Second Declarations (D8 & D8-1) were submitted to the USPTO during prosecution of each of the '092, '461, '106, '741, '217, and '322 patents. The transmittal letter for submission in each of these patents was signed by Mr. Zhengyu Feng. *E.g.*, Ex. AJ, NS00001125 (Cite No CS: "Experimental report submitted EPO Opposition in EP 2206781, Aug. 25, 2016"; Cite No. CT: "Experimental report (D 8-1) submitted in EPO Opposition in EP 2206781, Sept. 29, 2017"), NS00001130.

ANSWER: Counter-Defendants admit the allegations of paragraph 171. The cited documents speak for themselves.

172. A copy of Mr. Tone's Declaration (D13) was also submitted to the USPTO during prosecution of each of the '092, '461, '106, '741, '217, and '322 patents. The transmittal letter for submission in each of these patents was signed by Mr. Zhengyu Feng. *E.g.*, Ex. AJ, NS00001126 (Cite No. CY: "Experimental report (D13), submitted in EPO Opposition in EP 2206781, Sept. 29, 2017"), NS00001130.

ANSWER: Counter-Defendants admit the allegations of paragraph 172. The cited documents speak for themselves.

III. Responses to Allegations Regarding Mr. Naoki Watanabe

173. Mr. Watanabe, referenced above, is one of the four named inventors of the NS Patents. [redacted] The other three named inventors are Youhei Satou, Shin'ichi Takeda, and Tetsuya Nagata. *See, e.g.*, Ex. AC, Item (72). As a named inventor of the NS Patents, [redacted]

ANSWER: Counter-Defendant admits only that Mr. Watanabe, Youhei Satou, Shin'ichi Takeda, and Tetsuya Nagata are listed as named invention of the NS Patents. The remaining allegations of this paragraph contain legal conclusions to which no response is required, and, therefore, Counter-Defendant deny the remaining allegations.

[redacted]

174. [redacted]

ANSWER: Paragraph 174 cites to deposition testimony which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

175. [redacted]

ANSWER: Counter-Defendants admit that multiple individuals were involved in drafting the International PCT Application. Paragraph 175 cites to deposition testimony which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

176. Item (74) of the International PCT Application identifies Hiroshi Kobayashi et al., at AIK as "Agent." Ex. AD, Item (74); *see also* Ex. AE, Item (74). The Request Form filed with the International PCT Application also identifies Eiji Katayama, Norio Ohmori, Takayuki Imazato, and Yasuhito Suzuki as additional agents with the same address as the first named agent. Ex. AF, 4.

ANSWER: Paragraph 176 refers to documents which speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof.

177. [redacted]

ANSWER: Counter-Defendants admit only that Mr. Watanabe was a named inventor on the International PCT Application. Paragraph 177 refers to deposition testimony which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

[redacted]

178. [redacted] AIK and its attorneys prosecuted and obtained JP '343 Patent, directed to oligomers targeting positions 36 to 60 of Exon 53. *See supra* ¶¶157-59. [redacted] intermediary between (1) Mr. Watanabe and legal professionals at NS and (2) Mr. Zhengyu Feng who acted as the undersigned representative communicating with the USPTO regarding the NS Patents.

ANSWER: Counter-Defendants admit only that [redacted] The JP '343 Patent and cited deposition testimony speaks for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 178.

179. [redacted]

ANSWER: Paragraph 179 refers to deposition testimony which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

180. [redacted]

ANSWER: Counter-Defendants admit only that paragraph 180 quotes from Exhibit AV. Counter-Defendants deny the remaining allegations of paragraph 180.

181. [redacted].

[redacted]

ANSWER: Counter-Defendants admit only that paragraph 181 quotes from Exhibits AZ and AV. Counter-Defendants deny Sarepta's characterization of these exhibits. Counter-Defendants deny the remaining allegations of paragraph 181.

182. [redacted] One such publication was the Sazani paper, which reported the safety and genotoxicity of AVI-4658, as well as its chemical structure. [redacted]

ANSWER: Counter-Defendants admit only that paragraph 182 quotes from Exhibits BS and AZ. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Counter-Defendants deny the remaining allegations of paragraph 182.

183. The Sazani paper was published online on January 28, 2010. [redacted]

ANSWER: Counter-Defendants admit only that paragraph 183 quotes from Ex. AZ. The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 183.

184. [redacted]

ANSWER: The documents and testimony cited in paragraph 184 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 184.

[redacted]

185. The Sazani paper reports the safety and genotoxicity of AVI-4658 evaluated in non-human primates. Ex. BM, NS00085391. As reproduced below (*id*., NS00085393), the Sazani paper also discloses the chemical structure of AVI-4658, including its 5'-end modification. The 5'-end modification of AVI-4658, as reported in the Sazani paper, is identical to the 5'-end modification (3) recited in several claims of the NS Patents. *E.g.*, *see* ¶¶102-104, *supra*.

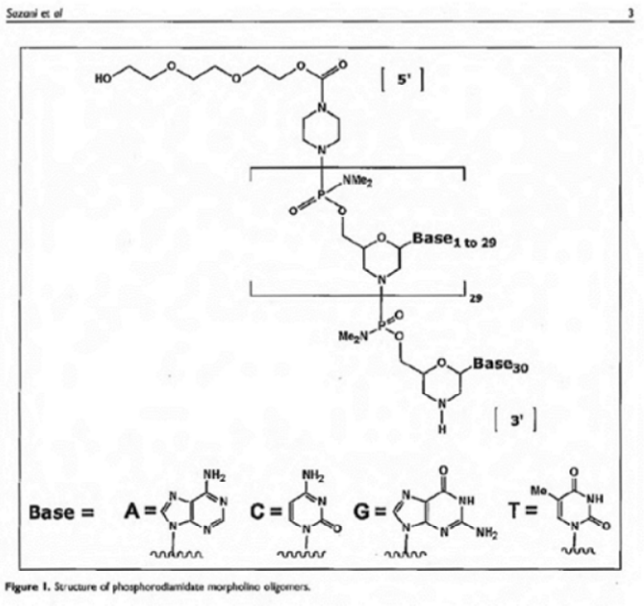


Figure 1. Structure of phosphorodiamidate morpholino oligomers.

ANSWER: Counter-Defendants admit only that paragraph 185 reproduces a portion of the cited Sazani paper. This paper speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 185.

186. [redacted] The Sazani paper was not submitted to the USPTO during prosecution of the NS Patents. Upon information and belief, the Examiner of the NS Patents was never informed about the existence of the Sazani paper during prosecution of the NS Patents.

ANSWER: Counter-Defendants admit only that the Sazani paper was not submitted to the USPTO during prosecution of the NS Patents. Counter-Defendants are without knowledge sufficient to form a belief regarding what the Examiner of the NS Patents was informed about, and, thus, deny the allegation in paragraph 186 pertaining to the same. Counter-Defendants deny the remaining allegations of paragraph 186.

[redacted]

187. [redacted]

[redacted]

ANSWER: Counter-Defendants admit only that paragraph 187 reproduces a portion of Ex. BH. Counter-Defendants deny the remaining allegations of paragraph 187.

188. [redacted].

ANSWER: The cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Counter-Defendants deny the remaining allegations of paragraph 188.

[redacted]

189. PMO-A in the Popplewell paper targets positions 35 to 59 of Exon 53. [redacted] Ex. AW, Table 1(a). [redacted]

ANSWER: Counter-Defendants admit only that paragraph 189 quotes from testimony included at Exhibit AZ. The remaining allegations of paragraph 189 cite to documents that speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 189.

190. [redacted]

ANSWER: Paragraph 190 cites to documents that speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 190.

191. Figures 9-17 of the NS Patents report skipping efficiencies (%) of oligomers at a single concentration, 100 nM. *See* Ex. AD, Figures 9-17; *supra* ¶¶105-106. [redacted]

ANSWER: The cited documents in paragraph 191 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Counter-Defendants deny the remaining allegations of paragraph 191.

192. [redacted]

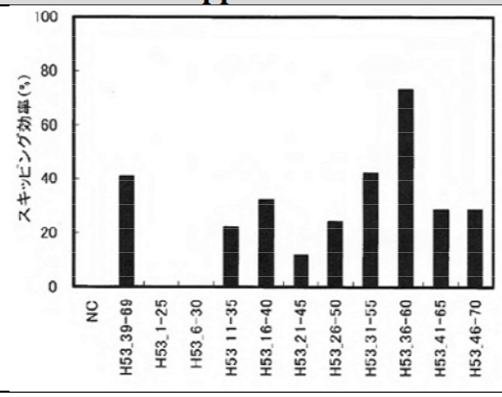
[redacted]

ANSWER: The cited documents in paragraph 192 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Counter-Defendants deny the remaining allegations of paragraph 192.

193. Figure 9 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

Figure 9 in the International PCT Application

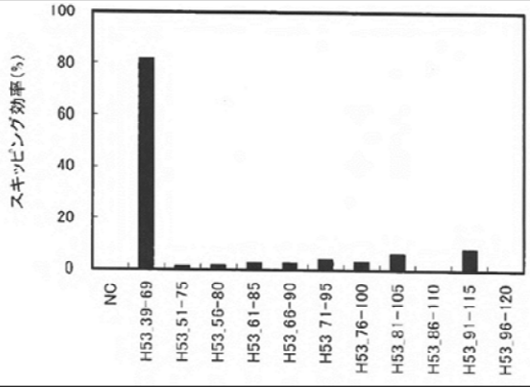


ANSWER: Counter-Defendants admit that paragraph 193 contains reproduction of figures from the referenced documents. These documents speak for themselves.

194. Figure 10 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

Figure 10 in the International PCT Application



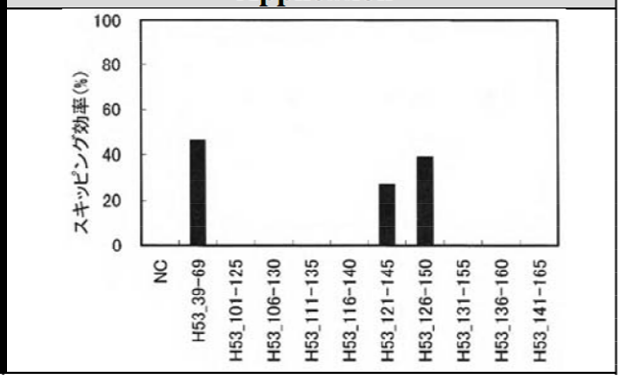
ANSWER: Counter-Defendants admit that paragraph 194 contains reproduction of figures from the referenced documents. These documents speak for themselves.

[redacted]

195. Figure 11 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

Figure 11 in the International PCT Application

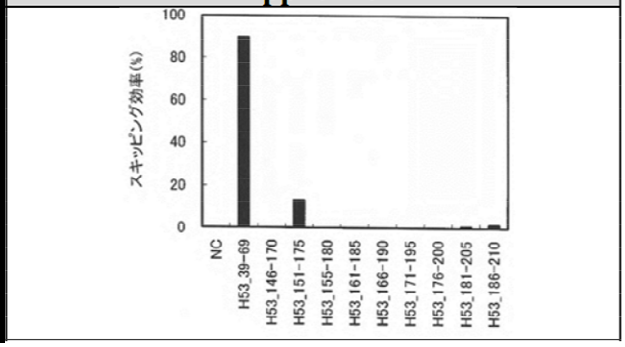


ANSWER: Counter-Defendants admit that paragraph 195 contains reproduction of figures from the referenced documents. These documents speak for themselves.

196. Figure 12 of the International PCT Application and [redacted] are reproduced below [redacted]

[redacted]

Figure 12 in the International PCT Application



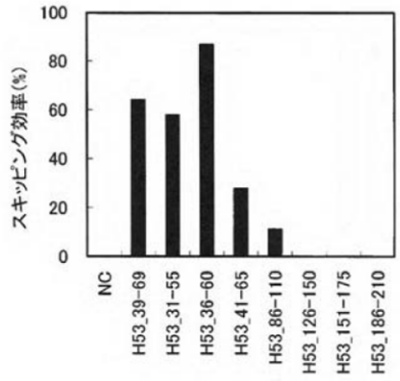
ANSWER: Counter-Defendants admit that paragraph 196 contains reproduction of figures from the referenced documents. These documents speak for themselves.

197. [redacted] Figure 13 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

[redacted]

Figure 13 in the International PCT Application

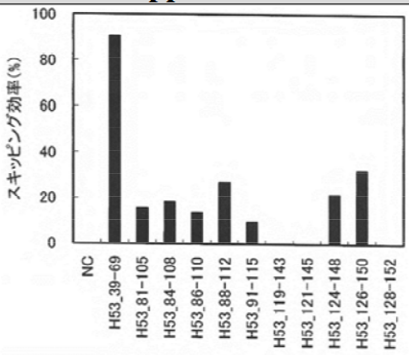


ANSWER: Counter-Defendants admit only that paragraph 197 contains reproduction of figures from the referenced documents. The referenced and cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 197.

198. [redacted] Figure 14 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

Figure 14 in the International PCT Application



ANSWER: Counter-Defendants admit only that paragraph 198 contains reproduction of figures from the referenced documents. The referenced and cited documents speak for themselves,

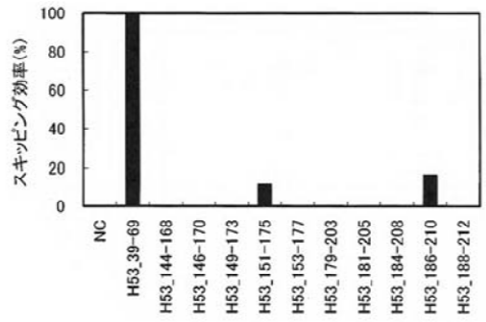
[redacted]

and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 198.

199. [redacted] Figure 15 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

Figure 15 in the International PCT Application



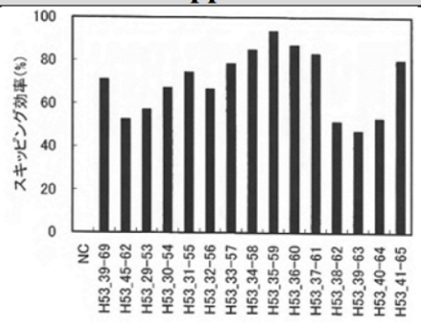
ANSWER: Counter-Defendants admit only that paragraph 199 contains reproduction of figures from the referenced documents. The referenced and cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 199.

200. [redacted] Figure 16 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

[redacted]

Figure 16 in the International PCT Application



ANSWER: Counter-Defendants admit only that paragraph 200 contains reproduction of figures from the referenced documents. The referenced and cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 200.

201. [redacted]

ANSWER: The cited documents in paragraph 201 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. The remaining allegations of paragraph 201 are denied.

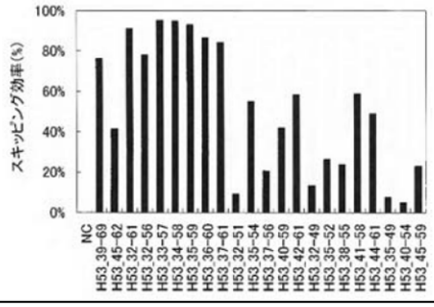
202. [redacted]

Figure 17 of the International PCT Application [redacted] are reproduced below [redacted]

[redacted]

[redacted]

Figure 17 in the International PCT Application



ANSWER: Counter-Defendants admit only that paragraph 202 contains reproduction of figures from the referenced documents. The referenced and cited documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 202.

203. [redacted]

ANSWER: Counter-Defendants admit only that paragraph 203 contains quotations from Exhibit AY. Exhibit AY speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. The remaining allegations of paragraph 203 are denied.

[redacted]

204. [redacted] not submitted to the USPTO during prosecution of the NS Patents. Upon information and belief, the Examiner of the NS Patents was never informed [redacted] during prosecution of the NS Patents.

ANSWER: Counter-Defendants are without knowledge or information sufficient to form a belief regarding the second sentence of paragraph 204, and, therefore, Counter-Defendants deny this allegation. Counter-Defendants deny the remaining allegations of paragraph 204.

205. Mr. Ueda's Experimental Report was submitted to the European Patent Office on March 16, 2018, during prosecution of EP '211 Patent. *See supra* ¶¶141-56. Mr. Ueda's Experimental Report included two experiments, labeled as Experiment 1 and Experiment 2. *See supra* ¶¶148-50.

ANSWER: Counter-Defendants admit only the first sentence of paragraph 205. The second sentence of paragraph 205 refers to an Experimental Report which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

206. [redacted] Experiments 1 and 2 from Mr. Ueda's Experimental Report (Ex. BQ) [redacted] are reproduced below:

[redacted]

Mr. Ueda's Experimental Report (Ex. BQ)

Experiment 1

Sequences	Concentration (μM)	Repeat number	Skipping efficiency(%)	
			Mean	Standard deviation
H53_36-60	10	3	45.5	10.9
H53_36-56	10	3	68.0	1.9

[redacted]

[redacted]

Mr. Ueda's Experimental Report (Ex. BQ)

Experiment 2

Sequences	Concentration (μM)	Repeat number	Skipping efficiency(%)	
			Mean	Standard deviation
H53_33-62	10	3	32.7	4.5
H53_36-56	10	3	76.2	8.0

ANSWER: Counter-Defendants admit only that paragraph 206 reproduces information from the cited documents. The cited and referenced documents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. The remaining allegations of paragraph 206 are denied.

207. [redacted] *with* Ex. BQ, 2. representations made by Mr. Feng to the USPTO, [redacted] The H53_30-59 oligomer targets the same positions within Exon 53 as PMO-G from the Popplewell paper. *See* Ex. AW, Table 1(a). The H53_36-60 oligomer targets the same positions within Exon 53 as PMOs claimed by the NS Patents. *See supra* ¶¶102-121. [redacted]

ANSWER: Paragraph 207 cites and refers to documents and deposition testimony that speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. The remaining allegations of paragraph 207 are denied.

[redacted]

208. [redacted] was not submitted to the USPTO during prosecution of the NS Patents. Upon information and belief, the Examiner of the NS Patents was never informed [redacted] Upon information and belief, the Examiner of the NS Patents was never informed [redacted]

ANSWER: Counter-Defendants are without knowledge or information sufficient to form a belief regarding the second sentence of paragraph 208, and, therefore, Counter-Defendants deny this allegation. Counter-Defendants deny the remaining allegations of paragraph 208.

209. Mr. Watanabe's First and Second Declarations were submitted to the European Patent Office on August 25, 2016 and September 29, 2017, respectively, during opposition of the EP '781 Patent. *See supra* ¶¶160-72. Collectively, Mr. Watanabe's First and Second Declarations included data obtained from four PMOs targeting positions 45 to 62, 49 to 69, 50 to 69, and 39 to 69 of Exon 53, respectively. *See supra* ¶¶163-69.

ANSWER: Counter-Defendants admit only that Mr. Watanabe's First and Second Declarations were submitted to the European Patent Office on August 25, 2016 and September 29, 2017, respectively, during opposition of the EP '781 Patent. These declarations speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof.

210. [redacted] The experiment reported in Mr. Watanabe's Second Declaration (Ex. BO) [redacted]

[redacted]

Mr. Watanabe's Second Declaration (Ex. BO)

% Skipping efficiency

Concentration (μM)		10	30
SEQ ID NO: 1	45-62	5.9 ± 1.3	15.1 ± 10.9
SEQ ID NO: 2	49-69	2.0 ± 0.5	5.5 ± 2.0
SEQ ID NO: 3	50-69	3.0 ± 3.4	7.1 ± 3.0
SEQ ID NO: 4	39-69	18.3 ± 3.6	24.7 ± 4.4

mean ± S.D.

ANSWER: Counter-Defendants admit only that paragraph 210 reproduces data from Exhibits BP and BO. The cited documents speak for themselves, and, thus, Counter-Defendants

[redacted]

deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 210.

211. [redacted]

Both the H53_23-43 and H53_23-42 oligomers satisfy each element of claim 1 of the UWA Patents. *See supra* ¶¶ 39, 43, 67. [redacted]

ANSWER: The referenced document and cited deposition testimony in paragraph 211 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 211.

212. [redacted]

ANSWER: The document referenced in and deposition testimony cited in paragraph 212 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 212.

213. [redacted] was not submitted to the USPTO during prosecution of the NS Patents. Upon information and belief, the Examiner of the NS Patents was never informed [redacted]

ANSWER: Counter-Defendants are without knowledge or information sufficient to form a belief regarding the second sentence of paragraph 213, and, therefore, Counter-Defendants deny this allegation. Counter-Defendants deny the remaining allegations of paragraph 213.

[redacted]

IV. Response to Allegations Regarding Inequitable Conduct Regarding the "Superiority" of Claimed Oligomers

214. The USPTO allowed the '361 patent based on Mr. Zhengyu Feng's affirmative representation that a claimed oligomer, targeting positions 36-60 of Exon 53, exhibited "superior skipping activity over" a prior art oligomer reported in the '212 publication and the Popplewell paper, specifically, PMO-G targeting positions 30-59 of Exon 53. *See supra* ¶¶126-139. That representation occurred on at least two separate occasions, on July 22, 2016 and February 27, 2017, in response to the USPTO's Office Actions. *Id*., ¶¶133-34, 136-38.

ANSWER: Counter-Defendants are without knowledge or information sufficient to form a belief regarding the truth of the allegations in the first sentence of paragraph 214, and, thus, Counter-Defendants deny the same. Counter-Defendants deny the remaining allegations of paragraph 214.

215. Mr. Zhengyu Feng's representations [redacted] Neither Mr. Zhengyu Feng nor Mr. Watanabe submitted [redacted] *See supra* ¶208. [redacted] was not submitted to the USPTO before the issuance of the '361 patent or any of the NS Patents. *Id.*

ANSWER: Counter-Defendants deny the allegations of paragraph 215.

216. Mr. Zhengyu Feng's representation to the USPTO also directly contradicts the [redacted] was not disclosed to the USPTO before the issuance of the '361 patent or any of the NS Patents. *Id.*, ¶208.

ANSWER: Counter-Defendants deny the allegations of paragraph 216.

217. But for this misrepresentation and the decision to withhold [redacted] the USPTO would not have allowed the '361 patent. If the USPTO had been aware of [redacted] it would not have allowed the '361 patent.

ANSWER: Counter-Defendants deny the allegations of paragraph 217.

[redacted]

218. The materiality of the misrepresentation [redacted] equally applies to each of the '092, '461, '106, '741, '217, and '322 patents. Each of the '092, '461, '106, '741, '217, and '322 patents is directed to substantially the same subject matter as the '361 patent—oligomers targeting positions 36 to 60 of exon 53. *See supra* ¶¶102-21. In view of the prosecution that led to the '361 patent, the USPTO allowed each of the '092, '461, '106, '741, '217, and '322 patents without any prior art rejection under 35 U.S.C. § 102 or § 103. *See supra* ¶140. Neither [redacted] were submitted to the USPTO by Mr. Watanabe or Mr. Feng before the issuance of the '092, '461, '106, '741, '217, and '322 patents. *See supra* ¶208. But for the misrepresentation [redacted] the USPTO would not have allowed any of the NS Patents to issue.

ANSWER: Counter-Defendants deny the allegations of paragraph 218.

219. [redacted]

ANSWER: Counter-Defendants admit only [redacted] The document referenced in and deposition testimony cited in paragraph 219 speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterizations thereof. Counter-Defendants deny the remaining allegations of paragraph 219.

220. This was not the first time that Mr. Watanabe failed to disclose material information to a patenting authority. As described above, on multiple occasions, Mr. Watanabe [redacted] himself or NS at the Patent Offices in the United States, Japan, and Europe.

ANSWER: Counter-Defendants deny the allegations of paragraph 220.

221. [redacted] Mr. Watanabe [redacted] in the specification of the NS Patents demonstrating that [redacted]

ANSWER: Counter-Defendants deny the allegations of paragraph 221.

222. Mr. Watanabe in the specification of the NS Patents demonstrating that

ANSWER: Counter-Defendants deny the allegations of paragraph 222.

223. Mr. Watanabe that contradicts the assertion that the "oligomer of the present invention is highly active than PMO-G" at the Japanese Patent Office. Mr. Watanabe also failed to provide his conclusions to the Japanese Patent Office. *See supra* ¶¶157-159; *see also id.*, ¶¶205-208.

ANSWER: Counter-Defendants deny the allegations of paragraph 223.

224. In his First and Second Declarations, Mr. Watanabe omitted that " *See supra* ¶¶209-13. The . Although Mr. Watanabe's First and Second Declarations were submitted to the USPTO during prosecution of each of the '092, '461, '106, '741, '217, and '322 patents, was never disclosed. *See supra* ¶213.

ANSWER: Counter-Defendants deny the allegations of paragraph 224.

225. On information and belief, law firm has been involved in various aspects of the NS Patents, including preparing and filing the underlying International PCT Application and prosecuting its Japanese counterpart patent in Japan. *See supra* ¶¶175-76, 157-59. may not have directly communicated with the USPTO, she bears the same duty of candor as Mr. Feng and Mr. Watanabe. *See* 37 C.F.R. ¶156(c) (duty to disclose material information extends to a person "who is *substantively involved* in preparation or prosecution of the application and who is *associated* with the inventor").

ANSWER: Counter-Defendants admit only that AIK was involved in prosecuting the NS Patents. Counter-Defendants deny the remaining allegations of paragraph 225.

226. NS would not have obtained the NS Patents. The single most reasonable inference from their pattern of failing to disclose is that Mr. Watanabe and Mr. Feng intended to mislead the USPTO.

ANSWER: Counter-Defendants deny the allegations of paragraph 226.

[redacted]

V. Response to Allegations Regarding Inequitable Conduct Regarding the Sazani Paper

227. The claims of the NS Patents are directed to PMOs intended to be used as therapies for treating Duchenne Muscular Dystrophy. *See supra* ¶¶102-21. The specification of the NS Patents also proposes using PMOs as an "active ingredient" for treating muscular dystrophy. Ex. AC, 25:10-15 ("the present invention provides the pharmaceutical composition for the treatment of muscular dystrophy, comprising as an active ingredient the oligomer of the present invention, a pharmaceutically acceptable salt or hydrate thereof"). Information regarding the safety and genotoxicity of PMOs, especially those developed for treating Duchenne Muscular Dystrophy, is material to the claims of the NS Patents.

ANSWER: Counter-Defendants admit only that paragraph 227 quotes from a portion of Ex. AC. The NS Patents speak for themselves, and, thus, Counter-Defendants deny Sarepta's characterization thereof. The remaining allegations of paragraph 227 are denied.

228. The Sazani paper provides non-cumulative, material information regarding the safety and genotoxicity of AVI-4658, a PMO developed to treat Duchenne Muscular Dystrophy. *See supra* ¶¶179-86. As shown in the Sazani paper, AVI-4658 carries the same 5'-end modification as the antisense oligomers later claimed by the NS Patents. *Id*., ¶185. In other words, the Sazani paper confirmed the "high safety" of PMOs, including those with the exact chemical modifications claimed in the NS Patents. *Id*., ¶¶183-85; *see also supra* ¶¶102-104. [redacted]

ANSWER: Paragraph 228 cites to a Sazani paper which speaks for itself, and, thus, Counter-Defendants deny Sarepta's characterization thereof. Counter-Defendants deny the remaining allegations of paragraph 228.

229. But Mr. Watanabe did not submit the Sazani paper to the USPTO during prosecution of the NS Patents. *See supra* ¶186. Had the USPTO been aware of the Sazani paper, along with the experimental data withheld from the USPTO, it would not have allowed the NS Patents to issue.

ANSWER: Counter-Defendants admit the Sazani paper was not submitted to the USPTO during prosecution of the NS Patents. Counter-Defendants deny the remaining allegations of paragraph 229.

[redacted]

230. [redacted] Nevertheless, Mr. Watanabe withheld the Sazani paper from submission to the USPTO. *See supra* ¶186. The single most reasonable inference that can be drawn from Mr. Watanabe's nondisclosure of material information is that it was done with the intent to mislead the USPTO.

ANSWER: Counter-Defendants deny the allegations of paragraph 230.

231. For at least the reasons set forth in the foregoing Paragraphs 96-230, the NS Patents are unenforceable due to inequitable conduct.

ANSWER: Counter-Defendants deny the allegations of paragraph 231, and incorporate by reference their responses to paragraphs 96-230.

RESPONSE TO PRAYER FOR RELIEF

Counter-Defendants deny that Counter-Plaintiffs are entitled to the relief they request or are entitled to any other relief.

RESPONSE TO DEMAND FOR A JURY TRIAL

Counter-Defendants admit that Counter-Plaintiffs have demanded a jury trial a jury trial for all triable issues alleged in its counterclaims but deny that a jury trial is warranted for Counterclaim V.

AFFIRMATIVE DEFENSES

Without assuming any burden other than those imposed by operation of law, and without admitting that they bear the burden of proof with respect to any of the following, Counter-Defendants, on information and belief, while reserving the right to add additional defenses based on facts learned in discovery or otherwise assert the following defenses.

[redacted]

First Defense
(Non-Infringement of the UWA Patents)

Counter-Defendants have not infringed and will not infringe, directly or indirectly, any valid and enforceable claim of the UWA Patents, either literally or under the doctrine of equivalents.

Second Defense
(Invalidity of the UWA Patents)

Each asserted claim of the UWA Patents is invalid for failure to comply with one or more requirements of the patent laws of the United States, including without limitation, 35 U.S.C. §§ 101, 102, 103, 112, and/or obviousness-type double patenting, and the rules, regulations, and laws pertaining thereto.

Third Defense
(Prosecution History Estoppel and Disclaimer)

Counter-Plaintiffs' claims that Counter-Defendants infringe the UWA Patents are estopped in whole, or in part, by representations made or actions taken during the prosecution of the applications that lead to the UWA Patents and/or related patents under the doctrine of prosecution history estoppel and/or prosecution history disclaimer.

Fourth Defense
(No Invalidity of the NS Patents)

All claims of the NS Patents are not invalid or unenforceable under 35 U.S.C. § 1 *et seq.*, and Counter-Plaintiffs will not be able to demonstrate otherwise by clear and convincing evidence.

Fifth Defense
(No Breach of Contract)

Counter-Defendants have not breached any contractual obligations under the MCA. To the extent Sarepta asserts a breach of contract claim against Counter-Defendant NS Pharma, NS Pharma was not a party to the MCA.

[redacted]

Sixth Defense
(Failure to State a Claim)

Counter-Plaintiffs' Counterclaims fail to state a claim upon which relief may be granted.

Seventh Defense
(Equitable Defenses and Remedies)

Sarepta's breach of contract claim and/or requested remedies arising from said breach of contract claim are barred in whole or in part under principles of equity, including unclean hands. By way of example only, in light of Sarepta's breach of the MCA by filing its IPR Petitions before the PTAB instead of challenging the validity of the NS Patents in the District of Delaware, Sarepta has unclean hands precluding it from enforcing the MCA and depriving it of any entitlement to injunctive or equitable relief for any alleged breach of the MCA by Counter-Defendants.

Eighth Defense
(No Damages)

Counter-Plaintiffs have not incurred any damages resulting from its allegations that Counter-Defendants have infringed the UWA Patents and/or breached the MCA. Counter-Defendants deny any allegations of infringement of the UWA Patents and breach of the MCA.

Ninth Defense
(Limitation on Damages and Costs)

Counter-Plaintiffs' claims for relief are barred in whole or in part, including without limitation by 35 U.S.C. §§ 286, 287, and/or 288.

Tenth Defense
(No Willful Infringement of the UWA Patents)

Counter-Defendants have not willfully infringed the UWA Patents, and Counter-Plaintiffs are therefore not entitled to enhanced damages pursuant to 35 U.S.C. § 284.

[redacted]

Eleventh Defense
(Unenforceability of the UWA Patents Based on Inequitable Conduct)

As set forth in the Counterclaims below, the UWA Patents are unenforceable due to inequitable conduct.

Twelfth Defense
(No Inequitable Conduct)

Counter-Plaintiffs cannot demonstrate that Counter-Defendants engaged in inequitable conduct and/or that Counter-Plaintiffs patents are unenforceable.

Thirteenth Defense
(No Exceptional Case)

Counter-Plaintiffs cannot prove that their case against Counter-Claim Defendants is exceptional and warrants the award of attorney fees under 35 U.S.C. § 285 or pursuant to the Court's inherent power.

Reservation of Additional Defenses

Counter-Defendants reserve the right to add additional defenses based on facts learned in discovery or otherwise.

COUNTERCLAIMS

Nippon Shinyaku Co., Ltd. and NS Pharma, Inc. (together, the "NS Counterclaimants") by and through their undersigned attorneys, assert the following allegations and counterclaims against Counterclaim Plaintiff Sarepta Therapeutics, Inc. ("Sarepta"):

[redacted]

Nature of the Action

1. The NS Counterclaimants assert a counterclaim for unenforceability of United States Patent Nos. 9,994,851 ("'851 Patent," D.I. 2-9), 10,227,590 ("'590 Patent," D.I. 2-10), and 10,266,827 ("'827 Patent," D.I. 2-11) (collectively, the "UWA Patents").

2. The NS Counterclaimants also assert a counterclaim for *Walker Process* fraud based on Sarepta's violations of the Sherman Act, 15 U.S.C. §§ 1 *et seq.* by asserting patents against the NS Counterclaimants that were obtained by fraud on the United States Patent and Trademark Office ("USPTO") in an effort to unlawfully acquire or maintain monopoly power through improper means. Upon information and belief, Sarepta is the exclusive licensee with assertion rights for the UWA Patents.

Parties

3. Nippon Shinyaku is a Japanese company with a principal place of business at 14, Nishinosho-Monguchi-cho, Kisshoin, Minami-ku, Kyoto 601-8550, Japan.

4. NS Pharma is a Delaware corporation with its principal place of business at 149 East Ridgewood Ave., Suite 280S, Paramus, NJ 07652.

5. Nippon Shinyaku is an innovative pharmaceutical company whose mission is to "help people lead healthier, happier lives." It accomplishes this mission by developing and supplying unique and high-quality therapies that are safe and highly effective relative to other drugs and that contribute to a better quality of life for patients.

6. Nippon Shinyaku not only serves general patient populations through its various drugs for urological diseases, hematology, gynecology, and otorhinolaryngology—but it also seeks to provide meaningful relief for patients suffering from rare, intractable diseases like DMD.

[redacted]

7. NS Pharma is a wholly-owned subsidiary of Nippon Shinyaku, and markets VILTEPSO® in the United States.

8. Upon information and belief, Sarepta is a Delaware corporation with its principal place of business at 215 First Street, Cambridge, Massachusetts 02142.

Jurisdiction and Venue

9. The NS Counterclaimants' claims for declaratory judgment of unenforceability of the UWA Patents arise under the Patent Laws of the United States, 35 U.S.C. §§ 1 *et seq.* and under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 *et seq.*

10. The NS Counterclaimants' *Walker Process* fraud claims arise under the Sherman Act, 15 U.S.C. §§ 1, *et seq.*

11. This Court has subject-matter jurisdiction over these claims under 28 U.S.C. §§ 1331 and 1338(a).

12. The amount in controversy exceeds $75,000, exclusive of interest and costs.

13. This Court has personal jurisdiction over Sarepta, a Delaware corporation, at least because Sarepta resides in this District and has consented to this Court's jurisdiction. D.I. 2-1, Section 10.

14. Venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) at least because Sarepta, a Delaware corporation, resides in this District and because Sarepta has consented to this venue. D.I. 2-1, Section 10.

Duchenne Muscular Dystrophy

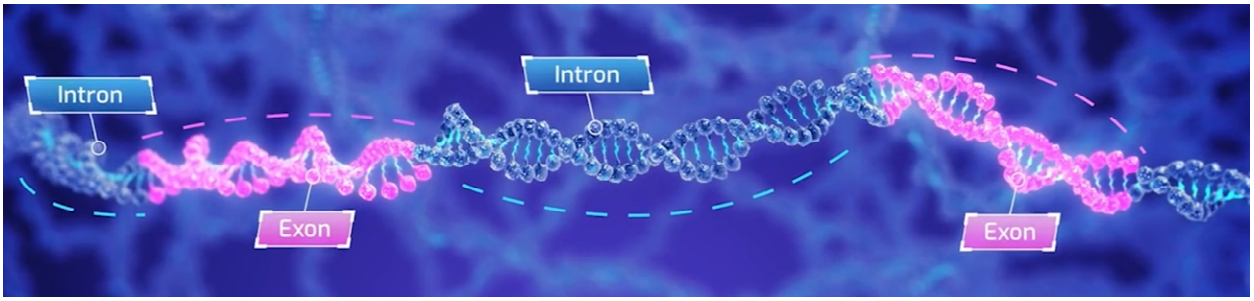
15. DMD is a severe X chromosome-linked genetic disorder that predominantly affects young boys. Approximately one in every 3,500 boys suffer from DMD, which is the most common form of hereditary progressive muscular dystrophy. Children with DMD suffer muscle weakness

[redacted]

as early as age four and progressively lose muscle function and quality-of-life. By age twelve, DMD patients typically lose ambulatory function and are confined to wheelchairs. Body-wide muscle loss also contributes to numerous other health complications throughout patients' lives. As a result of DMD-induced cardiac and/or respiratory deficiencies, most patients suffering from DMD do not live past their twenties.

16. DMD is caused by mutation(s) in the dystrophin gene, which codes for the dystrophin protein. The dystrophin protein contributes to cell membrane stability in muscle cells and makes muscle cells less fragile. In DMD patients, however, the mutated dystrophin gene causes significant under-expression of the dystrophin protein, leaving them with insufficient levels of dystrophin protein to maintain their muscle cells.

17. The dystrophin gene is long, spanning approximately 2.2 million nucleotide pairs and comprising 79 exons (regions of nucleotides that code for the 3,685 amino acids making up the dystrophin protein) interspersed with introns (regions that do not code for the dystrophin protein).



18. In a non-DMD patient, cells generally prepare dystrophin protein from the gene as follows:

> **Transcription:** The dystrophin gene (DNA) is transcribed into an RNA strand containing both exons and introns known as "pre-mRNA."
>
> **Splicing:** Cellular machinery removes intron sequences and "splices" the exons together to form mRNA.

[redacted]

> **Translation:** Cellular machinery "reads" the mRNA strand three nucleotides at a time to determine and assemble the amino acid sequence for dystrophin.

19. DMD typically results when a mutation shifts the amino acid reading frame, producing a non-functional dystrophin protein. As show below, even a single nucleotide deletion can alter how the cellular machinery reads the remainder of the mRNA sequence (and consequently how the cell assembles the dystrophin protein).

Original: ABC ABC ABC ABC ABC ABC

Mutation: ABA BCA BCA BCA BCA BCA

20. Mutations that preserve the original amino acid reading frame may produce a partially functional dystrophin protein with exon deletions. This typically causes a less-severe condition known as Becker Muscular Dystrophy ("BMD"). Like DMD, BMD patients suffer from muscle weakness and atrophy, but they experience milder and slower disease progression. Many BMD patients do not experience symptoms of disease onset until they are well into adulthood.

21. There is no cure for DMD. Care providers have traditionally prescribed corticosteroids to promote muscle strength and delay disease progression. Such treatment carries substantial risks of side-effects, including weight gain and weakened bones, and does not stop the progress of the disease.

Exon-Skipping Antisense Oligomers as a Therapeutic Option

22. Antisense oligomers ("ASOs") are short nucleic acid strands that modify splice patterns to address the genetic defects responsible for DMD. ASOs bind with particular nucleotide sequences in or near the exon of interest on the pre-mRNA strand. ASOs interfere with the ordinary splicing process, causing the cell to "skip" the mutated exon(s) when preparing mRNA.

23. By "skipping" the mutated exons, ASOs cause cells to prepare shorter-than-normal mRNA while preserving the original amino acid reading frame. As a result, patients' cells produce

[redacted]

partially functional—rather than non-functional—protein. Applied to DMD, these treatments effectively convert a DMD patient into a BMD patient, providing substantially better quality-of-life.

Nippon Shinyaku's Development of Exon 53 Skipping Oligomers

24. Recognizing the severe impact of DMD, Nippon Shinyaku began developing exon skipping therapies for DMD. Nippon Shinyaku focused first on therapies targeting exon 53, which would provide a treatment for approximately 8% of all DMD patients. Nippon Shinyaku ultimately determined that a 21 nucleobase (also call a 21mer) sequence targeted to the 36th to 56th nucleotides from the 5' end of exon 53 (H53_36-56) exhibited superior exon skipping.

25. On September 1, 2010, Nippon Shinyaku and National Center of Neurology and Psychiatry ("NCNP") filed Japanese Patent App. No. 2010-196032, which described their discoveries.

26. Nippon Shinyaku has since continued its development of the 21mer ASO—now known as VILTEPSO®—and secured approval in both Japan and the United States for the use of VILTEPSO® in treating DMD. While clinical trials are ongoing, initial results are promising. "[D]ystrophin levels increased, on average, from 0.6% of normal at baseline to 5.9% of normal at week 25."[9] And VILTEPSO® patients did not experience kidney toxicity, a side effect the FDA reported for other ASOs. *Id.*

[9] FOOD & DRUG ADMIN., *FDA Approves Targeted Treatment for Rare Duchenne Muscular Dystrophy Mutation*, (Aug. 12, 2020), https://www.fda.gov/news-events/press-announcements/fda-approves-targeted-treatment-rare-duchenne-muscular-dystrophy-mutation (last accessed September 1, 2023).

[redacted]

The UWA Patents

27. On June 12, 2018, the '851 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to the University of Western Australia ("UWA") as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '851 Patent.

28. On March 12, 2019, the '590 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to UWA as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '590 Patent.

29. On April 23, 2019, the '827 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to the UWA as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '827 Patent.

The NS Counterclaimants and Sarepta are Direct Competitors

30. The NS Counterclaimants and Sarepta are direct competitors that each provide antisense oligonucleotide-based therapies for the treatment of DMD. Sarepta and Nippon Shinyaku are the only companies with FDA clearance to market oligonucleotide therapies that are indicated for the treatment of DMD for patients who have a mutation of the DMD gene that is amenable to exon 53 skipping. Sarepta's product is marketed under the name VYONDYS 53, and Nippon Shinyaku's product is marketed under the name VILTEPSO®. Sarepta also markets a product, EXONDYS 51, which is sometimes prescribed to DMD patients who have a mutation of the DMD gene that is amenable to exon 53 skipping.

[redacted]

31. In 2013 and 2015, the UWA obtained two patents directed towards antisense oligonucleotide-based therapies for the treatment of DMD: the '636 Patent (D.I. 39-1) and the '007 Patent) (D.I. 39-2). Each of these patents' claims encompasses Sarepta's VYONDYS 53 but fails to encompass Nippon Shinyaku's VILTEPSO®.

32. On January 16, 2017, FDA granted Orphan Drug Designation to Nippon Shinyaku for its antisense oligonucleotide-based therapy that would eventually be approved and marketed under the name VILTEPSO®. D.I. 39-3. Subsequent to FDA granting this Orphan Drug Designation, applications for the three UWA Patents were filed with the USPTO. These UWA Patents, unlike the '636 Patent and '007 Patent, included new claims aimed at capturing VILTEPSO®. Sarepta has listed the UWA Patents on its FDA Orange Book listing for VYONDYS 53®. NDA applicants "shall file with the application the patent number and the expiration date of any patent which claims the drug for which the applicant submitted the application or which claims a method of using such drug with respect to which a claim of patent infringement could reasonably be asserted if a person not licensed by the owner engaged in the manufacture, use, or sale of the drug." 21 U.S.C. § 355(b)(1). In the Orange Book, Sarepta lists a patent expiry date for the UWA Patents of June 28, 2025 but is seeking a significant patent term extension that would extend their expiry date at least with respect to claims covering VYONDYS 53®.

33. Sarepta and Nippon Shinyaku have engaged in non-confidential communications regarding the licensing of Sarepta's UWA patents.

34. After some initial discussion, a meeting occurred on or about January 13, 2020, during which Sarepta's VYONDYS 53® product and Nippon Shinyaku's VILTEPSO® product were discussed. The meeting was attended by at least Mr. Matthew Gall of Sarepta and Mr. Masaya Toda of Nippon Shinyaku. As a result of that January 13, 2020, meeting, the Parties

[redacted]

agreed to engage in negotiations concerning the Parties' patent portfolios, including Sarepta's UWA Patents. Sarepta requested that further discussions be held under a confidentiality agreement, and Nippon Shinyaku understood that these discussions would include discussions of licensing Sarepta's UWA Patents to avoid litigation.

35. During the same timeframe and before January 28, 2020, Chris Verni, Saretpa's Chief IP counsel sought out Nippon Shinyaku's outside counsel while they were attending a conference for the Association of Corporate Patent Counsel. Mr. Verni raised concerns about the possibility of litigation between the Parties and encouraged discussions as a means to avoid litigation.

36. After June 1, 2021 Sarepta and Nippon Shinyaku were no longer engaged in confidential discussions relating to their respective patent portfolios or products.

37. On July 6, 2021, Mr. Joe Zenkus, Senior Vice President at Sarepta, emailed Mr. Masaya Toda at Nippon Shinyaku. D.I. 39-4. In his email, Mr. Zenkus notes that "Sarepta is prepared to… ***pursue other actions deemed necessary for it to protect its rights***." Mr. Zenkus's statement was a threat that Sarepta would assert its UWA Patents against Nippon Shinyaku. This communication was not subject to any confidentiality obligation. Nippon Shinyaku's apprehension that Sarepta would file a lawsuit asserting the UWA Patents against Nippon Shinyaku's U.S. sales of its VILTEPSO® product, threatening Nippon Shinyaku's goal to serving DMD patients and growing its U.S. market for this product, were realized when Sarepta asserted that the NS Counterclaimants infringe the UWA Patents. D.I. 89.

38. As set forth in Nippon Shinyaku's Second Amended Complaint (D.I. 86), the claims of the UWA Patents are invalid for failing to comply with the conditions and requirements

[redacted]

of the patent laws of the United States, including, specifically and without limitation, 35 U.S.C. §§ 102, 103, and 112, and the rules, regulations, and laws pertaining thereto.

39. Discovery produced by Sarepta now confirms that the UWA Patents are unenforceable because they were obtained by fraud on the USPTO.

CLAIM X
(Unenforceability of the UWA Patents Based on Inequitable Conduct)

40. The NS Counterclaimants reallege and incorporate by reference the allegations set forth in the preceding paragraphs as if fully set forth herein.

Prosecution of the UWA Patents

41. Upon information and belief, [redacted]. Upon information and belief, Sarepta was responsible for the application and prosecution of the UWA Patents.

42. On September 14, 2017, [redacted] and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 15/705,172 ("the '172 Application") on antisense molecules for inducing exon 53 skipping in the dystrophin gene, naming [redacted]. The '172 Application issued as the '851 Patent on June 12, 2018.

43. On August 24, 2018, UWA and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 16/112,371 ("the '371 Application") on antisense molecules for inducing exon 53 skipping in the dystrophin gene, again naming [redacted]. The '371 Application issued as the '590 Patent on March 12, 2019.

44. On August 24, 2018, UWA and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 16/112,453 ("the '453 Application") on methods for treating a

[redacted]

patient with DMD with mutations amenable to exon 53 skipping by administering antisense molecules for inducing exon 53 skipping, again naming [redacted]. The '453 Application issued as the '827 Patent on April 23, 2019.

45. The '172 Application, the '371 Application, and the '453 Application (together, the "UWA Applications") each claimed priority to U.S. Patent Application No. 15/274,772, filed on September 23, 2016, which claimed priority to U.S. Patent Application No. 14/740,097, filed on June 15, 2015, which in turn claimed priority to U.S. Patent Application No. 13/741,150, filed on January 14, 2013, which in turn claimed priority to U.S. Patent Application No. 13/168,857, filed on June 24, 2011, which in turn claimed priority to U.S. Patent Application No. 12/837,359, filed on July 15, 2010, which in turn claimed priority to U.S. Patent Application No. 11/570,691, filed on January 15, 2008, which was the National Phase Application of PCT Application PCT/AU2005/000943, filed on June 28, 2005 ("the PCT Application"). The PCT Application claimed priority to Australian Patent Application No. 2004903474, filed on June 28, 2004 ("the AU Application").

46. The PCT Application was published as WO 2006/000057 ("WO '057"). The specifications of the UWA Applications are substantially identical to WO '057.

47. Sarepta asserts via its Counterclaims in this litigation that VILTEPSO® infringes at least claim 1 of the '851 Patent, at least claim 1 of the '590 Patent, and at least claim 1 of the '827 Patent ("the Sarepta Asserted Claims."). D.I. 89 ¶¶ 42, 46-47, 56, 59-61, 66, 70-71.

48. The Sarepta Asserted Claims each claim a genus of ASOs "of 20 to 31 bases comprising . . . at least 12 consecutive bases of [SEQ ID NO: 195] . . . where in the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping . . ." (the "Claimed Genus") and methods of using such

[redacted]

ASOs for the treatment of DMD in patients who have a mutation of the DMD gene that is amenable to exon 53 skipping. *See* D.I. 89 ¶ 24.

49. Upon information and belief, none of the sequences presented in the AU Application target exon 53 or are described as being capable of inducing skipping of exon 53. SEQ ID NO. 195, a sequence recited in each of the Sarepta Asserted Claims, was not described by UWA until it filed the PCT Application. Accordingly, the earliest priority date to which the UWA Patents could possibly be entitled is June 28, 2005, the PCT Application filing date.

[redacted] ***Had Not Invented the Claimed Genus as of the PCT Filing Date***

50. As stated in WO '057 and the '851 Patent specification, as of June 28, 2005, [redacted] "attempts to induce exon skipping using antisense molecules have had mixed success" and "[s]imply directing the antisense oligonucleotides to motifs presumed to be critical for splicing is no guarantee of the efficacy of that compound in a therapeutic setting" and "[a]ttempts by the inventors to develop a rational approach in antisense molecules design were not completely successful as there did not appear to be a consistent trend that could be applied to all exons. As such, the identification of the most effective and therefore most therapeutic antisense molecules compounds has been the result of empirical studies." '851 patent, Col. 3:43-44; Col. 4:19-22; Col. 32:15-21; WO '057 at 4:13-14, 5:16-18, 35:1-6.[10] [redacted] further noted that "size or length of the antisense oligonucleotide itself is not always a primary factor when designing antisense molecules" and "there does not appear to be any standard motif that can be

[10] The Asserted Sarepta Patents have substantially identical specifications, which are in turn substantially identical to the PCT Application. For simplicity, the NS Counterclaimants cite to the '851 Patent specification and the WO '057 specification. However, the same disclosures may be found in the specifications of the '590 Patent and '827 Patent.

[redacted]

blocked or masked by antisense molecules to redirect splicing." '851 Patent, Col. 23:60-63 and 24:4-6; WO '057 at 21:10-13, 18-20.

51. During prosecution of the '172 Application, and in order to overcome rejections under 35 U.S.C. § 103, the applicant UWA, [redacted], and their attorney [redacted] argued that "at the time the instant invention was made, there was a significant level of unpredictability associated with selecting specific antisense oligonucleotide sequences to induce effective dystrophin exon skipping." *See* Exhibit A, 2018-01-05 Amendment, at 10. [redacted] and their attorney characterized the state of the art as teaching that "***significant experimentation is required*** to arrive at specific oligonucleotides" and "it is a hit-or-miss proposition in terms of whether any given antisense oligonucleotide will be capable of inducing exon skipping, ***even in situations where the antisense oligonucleotides are very similar to each other in terms of nucleotide sequence and other variables concerning the chemical backbone are fixed***." *Id.* at 11, 13 (emphasis original). In other words, [redacted] and their attorney were aware during prosecution of the UWA Patents and at the time the PCT Application was filed that providing a base sequence (SEQ ID NO: 195) and specifying a backbone (morpholino) is insufficient to predict whether any similar ASO will induce exon 53 skipping and relied on this unpredictability to overcome rejections.

52. [redacted] and their attorney argued that, "at or near the date of Applicants' invention" in 2005 and even "beyond 2005," "***a trial and error procedure*** is still involved to identify potent AONs." *Id.* at 12-14 (emphasis original). [redacted]nd their attorney also characterized a 2011 article by Wu et al. as "evidence developed after the instant filing date." *Id.* at 14. [redacted] and their attorney further argued that "[i]mportantly, the PTAB in Interference No. 106,007 concerning exon 53 antisense oligonucleotides for DMD

[redacted]

held that the field of antisense oligonucleotides for exon skipping for DMD was unpredictable at the time the instant application was filed." *Id.* at 15. [redacted] and their attorney asserted that "[u]npredictability in this art was determined by the PTAB to have existed at the time of the instant invention (and years afterwards) and "[t]he PTAB's determination of unpredictability still applies." *Id.* at 16.

53. Upon information and belief, [redacted]. The UWA Patents are only properly entitled to claim priority to, at the earliest, the September 14, 2017 filing date of the '172 Application.

54. The Claimed Genus encompasses a vast number of ASOs that are 20 to 31 bases and comprise at least 12 consecutive bases of SEQ ID NO: 195.

55. SEQ ID NO: 195 is not a morpholino ASO but rather a 2-O-methyl phosphorothioate ASO. *See, e.g.*, '851 Patent Table 1A titled "Description of 2-O-methyl phosphorothioate antisense oligonucleotides ***that have been used to date*** to study induced exon skipping during the processing of the dystrophin pre-mRNA. Since ***these 2'-O-methyl antisense oligonucleotides*** are more RNA-like, U represents uracil. With other antisense chemistries such as peptide nucleic acids or morpholinos, these U bases may be shown as 'T' and disclose SEQ ID NO: 195 as "CUG AAG GUGU UC UUG UAC UUC AUC C."(emphasis added); *see also* WO '057 at 16-17. The '851 Patent does not disclose any therapeutic utility or potential for therapeutic utility for SEQ ID NO: 195. Instead, the '851 Patent teaches that a ***different*** ASO that is ***not*** a

[redacted]

member of the Claimed Genus, SEQ ID NO: 193, induced the strongest exon 53 skipping. '851 Patent, Col. 64:48-49; WO '057 at 62:14-15.

56. Upon information and belief, as of the PCT Application filing date, [redacted]

57. Upon information and belief, [redacted]

58. Thus, upon information and belief, as of the PCT Application filing date, [redacted]

59. [redacted].

60. Conception is the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Hybritech Inc. v. Monoclonal Antibodies Inc.*, 802 F. 2d 1367, 1376 (Fed. Cir. 1986). There must

[redacted]

be a contemporaneous recognition and appreciation of the invention for there to be conception. *Silvestri v. Grant*, 496 F.2d 593, 596 (CCPA 1974).

61. Upon information and belief, [redacted] did not conceive the genus of antisense oligonucleotides claimed by each UWA Patent as of the PCT Application filing date. [redacted] could not possibly have formed a "definite and permanent idea of the complete and operative invention" or have a contemporaneous recognition and appreciation of the Claimed Genus [redacted]

62. [redacted] *Yorkey v. Diab*, 601 F.3d 1279, 1286 (Fed. Cir. 2010); *In re Curtis*, 354 F.3d 1347, 1358 (Fed. Cir. 2004) ("[A] patentee will not be deemed to have invented species sufficient to constitute the genus by virtue of having disclosed a single species when . . . the evidence indicates ordinary artisans could not predict the operability in the invention of any species other than the one disclosed.").

63. [redacted] cannot rely on a constructive reduction to practice because the disclosure of the PCT Application does not comply with 35 U.S.C. § 112, first paragraph. *Kawai v. Metlesics*, 480 F.2d 880, 886, (CCPA 1973). The UWA Patents are not entitled to claim priority to the June 28, 2005 filing date of the PCT Application under 35 U.S.C. § 120, and are invalid under 35 U.S.C. § 112 on the same basis. *See* D.I. 89 at ¶¶ 88-91.

[redacted]

64. [redacted]

65. The PCT Application references a single ASO with at least 12 consecutive bases of SEQ ID NO: 195, which only induced "very faint skipping to 50 nM." '851 patent, Table 39; WO '057 at 62. This single ASO neither enables nor describes the vast genus of ASOs encompassed by the Claimed Genus sufficient to meet the requirements of 35 U.S.C. § 112, particularly in an unpredictable art. *See Goeddel v. Sugano*, 61 F.3d 1350, 1355 (Fed. Cir. 2010).

66. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is at least 12 consecutive bases of SEQ ID NO: 195 other than SEQ ID NO: 195 itself.

67. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is "at least 12 consecutive bases of . . . (SEQ ID NO: 195), in which uracil bases are thymine bases" that induces exon 53 skipping.

68. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is at least 12 consecutive bases of SEQ ID NO: 195 and is a morpholino ASO that induces exon 53 skipping.

69. The PCT Application does not disclose even a single ASO with at least 12 consecutive bases of SEQ ID NO: 195 that induces more than "very faint skipping to 50 nM" of exon 53.

70. The PCT Application does not disclose any ASO in the Claimed Genus that induces a degree of exon 53 skipping that would be clinically or therapeutically relevant in treating a patent with DMD who has a mutation of the DMD gene that is amenable to exon 53 skipping.

[redacted]

71. In sum, the PCT Application does not constitute a "full, clear, concise and exact description" of the Claimed Genus. *In re Wertheim,* 646 F.2d 527, 538-539 (CCPA 1981). There are no "blaze marks within the disclosure that guide attention to the claimed species" or the Claimed Genus. *In re Ruschig*, 379 F.2d 990, 994-95 (CCPA 1967). Upon information and belief, no reasonable person of ordinary skill in the art would conclude from the PCT Application that [redacted] had invented and possessed the full scope of the Claimed Genus by its filing date.

72. Further demonstrating a lack of conception, recognition, or appreciation of the Claimed Genus when the PCT Application was filed, in work done *after* the filing date, [redacted] pursued SEQ ID NO: 193 rather than the Claimed Genus, as well as AONs targeting different exons. For example, in a later PCT application published as WO 2011/057350, [redacted] disclosed numerous ASOs targeting other exons, and only a handful of ASOs with at least 12 consecutive bases of SEQ ID NO: 195.

[redacted] and the Attorneys Knowingly Submitted a False Claim of Priority

73. [redacted] attorneys involved in the prosecution of the UWA Applications, including [redacted] (the "Attorneys"), and individuals at Sarepta involved in the filing or prosecution of the UWA Applications, understood that the field of ASOs for inducing exon skipping was highly unpredictable both at the time of filing of the PCT Application and the filing dates of the UWA Applications.

74. Upon information and belief, [redacted] knew [redacted] had not invented the Claimed Genus by the PCT Application filing date. Upon information and belief, the Attorneys, [redacted], and individuals at UWA and Sarepta who were involved in the preparation or prosecution of the UWA Applications, knew that [redacted] had not invented the claimed

[redacted]

genus by the PCT Application filing date. Upon information and belief, [redacted] and the Attorneys, and individuals at Sarepta who were involved in the preparation or prosecution of the UWA Applications knew that the claims set forth in the UWA Applications were not entitled to claim priority to the PCT Application because the requirements of 35 U.S.C. § 120 were not met. Yet, [redacted] the Attorneys, and individuals at Sarepta who were involved in the preparation or prosecution of the UWA Applications nevertheless submitted a claim of priority to the PCT Application in each of the UWA Applications. [redacted] Attorneys perpetuated this fraud by mischaracterizing the "time the instant invention was made," "the date of Applicants' invention" and "the time of the instant invention" to the USPTO in arguing for patentability. Exhibit A, at 10, 12, 16.

75. Thus, [redacted] and the Attorneys knew one fact and presented another, thereby permitting an inherence that they made the false representations with the intent to deceive. *See Dippin Dots, Inc. v. Mosey*, 476 F.3d 1337, 1347 (Fed. Cir. 2007).

76. These priority claims were false and objectively unreasonable. Upon information and belief, UWA, [redacted], and the Attorneys made the false priority claim in each of the UWA Applications at Sarepta's direction to avoid prior art and obtain patent claims that were aimed at capturing VILETPSO® and many other ASOs for anticompetitive purposes.

77. "Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned." 37 C.F.R. § 1.56(a) (Sept. 8, 2000). Information is "material to patentability when it is not cumulative

[redacted]

to information already of record or being made of record in the application, and (1) it establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) it refutes, or is inconsistent with, a position the applicant takes in: (i) opposing an argument of unpatentability relied on by the Office, or (ii) asserting an argument of patentability." 37 C.F.R. § 156(b). The priority date of a patent application is inherently material to patentability. *Nilssen v. Osram Sylvania, Inc.*, 504 F.3d 1223, 1233 (Fed. Cir. 2007).

78. Individuals who owe the USPTO a duty of candor and good faith are: "(1) each inventor named in the application; (2) each attorney or agent who prepares or prosecutes the application; and (3) every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee, or with anyone to whom there is an obligation to assign the application." 37 C.F.R. § 156I.

79. Thus, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, owe a duty of candor and good faith to the USPTO as individuals associated with the filing and prosecution of a patent application. 37 C.F.R. § 1.56I.

80. Upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, each violated their duty of candor and good faith to the USPTO by submitting and maintaining in each of the UWA Applications a claim of priority to the PCT Application that they knew was false and unsupported in view of [redacted] work and the specification.

81. Upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, each violated their duty of candor and good faith to the USPTO by withholding information that [redacted]

[redacted] possessed at best [redacted] from the Claimed Genus as of the PCT Application filing date.

82. Upon information and belief, [redacted] and the Attorneys, along with any at Sarepta involved in the filing and prosecution of the UWA Applications, deliberately submitted false information and withheld information material to patentability with deceptive intent to obtain allowance of the Sarepta Asserted Claims. Upon information and belief, [redacted] and the Attorneys engaged in this conduct at Sarepta's direction in an attempt to obtain claims encompassing the NS Counterclaim Defendants' competing product [redacted]

83. Further, upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, were aware of references published after the filing date of the PCT Application and before the filing dates of the UWA Applications that would have been material to patentability if they had been considered by the USPTO during examination of the UWA Applications.

84. By way of example only, on information and belief, [redacted] and the Attorneys, and individuals at Sarepta involved in the prosecution of the UWA Applications were aware of Sazani et al., U.S. Patent Application Publication No. 2010/0130591 ("Sazani") and Watanabe et al., U.S. Patent Application Publication No. US 2013/0211062 ("Watanabe") (together, the "Material References"). Upon information and belief, [redacted] or the Attorneys knew these Material References were properly prior art to the UWA Applications but for the false priority claim. Upon information and belief, [redacted] and the Attorneys,

[redacted]

and individuals at Sarepta involved in the prosecution of the UWA Applications were aware that the Material References were but-for material to the patentability of the Sarepta Asserted Claims.

85. Sazani is titled "Multiple Exon Skipping Compositions for DMD" and, for example, discloses an antisense oligomer spanning exactly H53A(+23+47), and is therefore identical to SEQ ID NO: 195 recited in the Sarepta Asserted Claims:

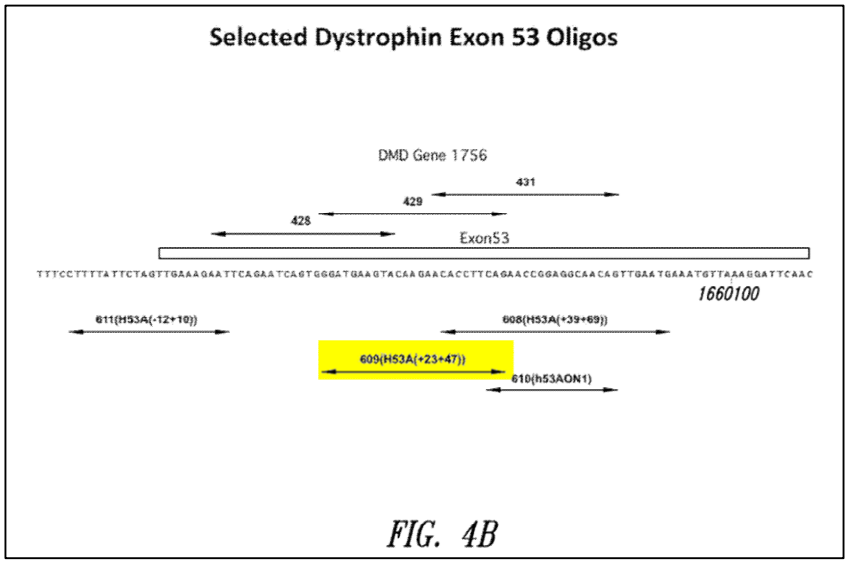
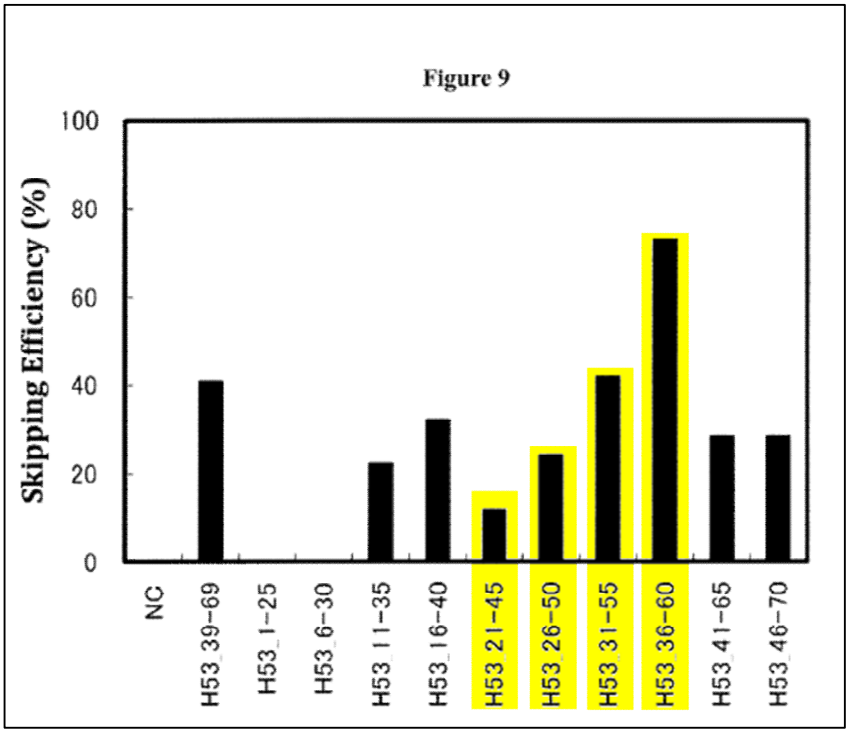


FIG. 4B

Watanabe, a patent publication disclosing AONs that cause exon 53 skipping, further discloses a series of antisense oligonucleotides that bind along exon 53 at sites that overlap with the portion of exon 53 to which SEQ ID NO: 195 binds and which cause varying degrees of skipping:

[redacted]



86. Sarepta filed the application published as Sazani. Upon information and belief,

[redacted]

[redacted] Sazani discloses that its SEQ ID NO: 429 "proved identical to H53A(+23+47) which is listed as SEQ ID NO: 195 in WO 2006/00057," the publication of the PCT Application. Sazani at [0293]. In contrast to the PCT Application, Sazani discloses its SEQ ID NO: 429 "was shown to be most effective at inducing exon skipping" from the ASOs targeting exon 53 described in Sazani, thus illustrating the unpredictability of the art. *Id.*

87. Upon information and belief, the claim of priority to the PCT Application caused the USPTO to allow the UWA Patents to issue. The USPTO did not consider the Material References because each was published after the claimed priority date and thus was not considered prior art under 35 U.S.C. §§ 102 and 103 to the PCT Application. The USPTO would not have allowed the UWA Patents to issue had the Examiner considered the Material References. Had the

[redacted]

Examiner considered the Material References, the Examiner would have found all claims of the UWA Patents unpatentable under 35 U.S.C. §§ 102 and 103 as anticipated and/or obvious.

88. The single most reasonable inference able to be drawn from the evidence is that at least [redacted] and the Attorneys, as well as individuals from UWA or Sarepta involved in the prosecution of the UWA Applications, intended to deceive the USPTO by intentionally and falsely claiming priority to the PCT Application.

89. For example, Watanabe and other references from the Watanabe patent family have been cited against Sarepta's patent applications, including U.S. Application No. 16/243,926 ("the Sazani CON"), a continuation of Sazani that attempted to claim a genus of ASOs "of 21 bases comprising a base sequence . . . . where in the base sequence comprises 19 consecutive bases of SEQ ID NO: 431, where in the antisense oligonucleotide is a morpholino oligomer, and wherein the antisense oligonucleotide induces exon 53 skipping . . ." During prosecution of the Sazani CON, the USPTO examiner rejected a priority claim to the Sazani filing date for failure to comply with 35 U.S.C. § 112(a), thereby rendering Watanabe prior art to the Sazani CON. The USPTO examiner then rejected the claims as anticipated by Watanabe because Watanabe disclosed a sequence consisting of 21 bases comprising 19 consecutive bases of SEQ ID NO: 431. 2019-05-05 Final Rejection. Rather than arguing against the rejection or the priority date determination, Sarepta abandoned the Sazani CON. [redacted] one of the Attorneys, prosecuted the Sazani CON.

90. Upon information and belief, the rejection of the Sazani CON demonstrates that individuals at Sarepta were aware of Watanabe and that Watanabe was but-for material to the UWA Patents and was further aware that the priority claim to the PCT Application was legally unjustified.

[redacted]

91. As a result of the [redacted] and the Attorneys' intentional false claim of priority to the PCT Application with the intent to deceive the USPTO, [redacted] and the Attorneys committed inequitable conduct, thereby rendering the UWA Patents unenforceable. Upon information and belief other individuals involved in the prosecution of the UWA Patents, such as individuals at UWA or Sarepta, also committed inequitable conduct rendering the UWA Patents unenforceable.

92. This case is exceptional, and the NS Counterclaimants are entitled to an award of attorneys' fees under 35 U.S.C. § 285.

CLAIM XI
(Walker Process Fraud, 15 U.S.C. § 2)

93. The NS Counterclaimants reallege and incorporate by reference the allegations set forth in the preceding paragraphs as if fully set forth herein.

94. During prosecution of the UWA Applications, [redacted] and the Attorneys withheld and failed to disclose information concerning the lack of conception and reduction to practice of the Claimed Genus as of the PCT Application date. Upon information and belief, [redacted] and the Attorneys knowingly submitted a false claim of priority in each of the UWA Applications.

95. Upon information and belief, had the UWA Applications been accorded the priority date to which they were rightfully entitled, which was at the earliest, the September 14, 2017 filing date of the '172 Application, the UWA Patents would never have issued in view of the material references, which were never considered by the USPTO due to the false claim of priority.

96. As a result, the UWA Patents were obtained by fraud. Upon information and belief, there was an agency relationship as defined in section 2752 of the Manual of Patent Examining Procedure between UWA as the owner of the UWA Patents and Sarepta as the marketing applicant

[redacted]

before the FDA during the regulatory review period for Sarepta's VYONDYS 53 product, which began on January 28, 2006 and ended December 12, 2019. Upon information and belief, Sarepta was responsible for obtaining and maintaining the UWA Patents and is responsible for enforcing the Sarepta Asserted Claims against the NS Counterclaimants, all with knowledge of the fraudulent manner in which the UWA Patents were procured.

97. For example, [redacted]

98. Yet, Sarepta continues to maintain its patent infringement claims against the NS Counterclaimants based on the UWA Patents.

99. Section 2 of the Sherman Act prohibits monopolization and attempted monopolization. 15 U.S.C. § 2. By attempting to enforce the legal monopoly conferred by the UWA Patents, which were obtained by fraud, Sarepta has engaged in monopolization and/or attempted monopolization in violation of the Sherman Act, including within the doctrine set forth in *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965).

[redacted]

100. Sarepta has engaged in predatory or anticompetitive conduct with a specific intent to monopolize by attempting to enforce the UWA Patents against its only competitor in the market for DMD patients with mutations amenable to exon 53 skipping who have been prescribed with an ASO therapy (the "Product Market"), Nippon Shinyaku.

101. No substitute FDA-approved therapies exist that have the same, or reasonably similar, clinical potential for treating DMD patients with mutations amenable to exon 53 skipping as ASO therapies.

102. There are no other FDA approved alternative therapies for treating DMD that are reasonable substitutes for ASO therapies. Exon-skipping therapies aim to address the underlying issue in DMD—insufficient levels of the protein dystrophin caused by mutation in the dystrophin gene. They use ASOs to alter RNA splicing, resulting in production of truncated dystrophin protein. Other FDA-approved therapies for DMD, such as corticosteroids, are mainly prescribed for symptom management and do not restore dystrophin levels.

103. By virtue of Sarepta's attempt to enforce the fraudulently obtained UWA Patents against the NS Counterclaimants, Sarepta has attempted to acquire illegal monopoly power in the Product Market.

104. The relevant geographic market for the Product Market is the United States. The United States is the relevant geographic area in which consumers in the Product Market rationally look for DMD treatment therapies. DMD treatment therapies are heavily regulated by the FDA, and the Federal Food, Drug, and Cosmetic Act prohibits importation of drugs that have not been approved by the FDA.

105. There is a dangerous probability that Sarepta will achieve monopoly power in the Product Market in the U.S. Upon information and belief, [redacted]

[redacted]

[redacted]. Other than Sarepta's two products EXONDYS 51 and VYONDYS 53, the only other FDA-approved product in the Product Market is Nippon Shinyaku's VILTEPSO® product.

106. As a result of Sarepta's unlawful acts, the NS Counterclaimants have suffered and will continue to suffer antitrust injury. The antitrust injury to the NS Counterclaimants caused by Sarepta's refusal to grant a covenant not to sue and attempted enforcement of the UWA Patents against them include at least forcing the NS Counterclaimants to expend substantial amounts of money, time, and human resources in order to defend against Sarepta's claims of infringement.

107. By asserting the UWA Patents and continuing to assert them against the NS Counterclaimants despite fraudulently obtaining and enforcing those patents under *Walker Process*, Sarepta has abused the legal process, making the attorneys' fees incurred by the NS Defendants during that legal process a relevant antitrust injury. *TransWeb, LLC v. 3M Innovative Properties Co.*, 812 F.3d 1295, 1312 (Fed. Cir. 2016).

108. Faced with Sarepta's anticompetitive infringement claims and threats thereof, Nippon Shinyaku had three options: cease competition, take a license, or defend the infringement claims. If Nippon Shinyaku ceased competition, Sarepta would achieve a monopoly over the Product Market in the U.S. and critically ill DMD patients would be harmed from being deprived of a safe and effective therapy.

109. If Nippon Shinyaku took a royalty-bearing license, particularly one at a supracompetitive royalty rate, it would be placed in a disadvantageous competitive position. A royalty would raise the NS Counterclaimants' costs for VILTEPSO®. VILTEPSO® is currently priced below VYONDYS 53. Upon information and belief, if required to pay a royalty to Sarepta, the NS Counterclaimants may have to raise the price for VILTEPSO®, thereby reducing their ability to compete on price against Sarepta, which would necessarily reduce price competition in

[redacted]

the Product Market in the U.S. Higher prices in the Product Market as a result of Sarepta's conduct would harm consumers. Upon information and belief, if the NS Counterclaimants did not raise prices for VILTEPSO®, this would divert money and personnel from activities supporting the further development of VILTEPSO® and research and development of additional DMD treatments. This could deprive DMD patients of new safe and effective therapies.

110. For the same reasons, Sarepta's demand for monetary damages including a royalty in this lawsuit would also raise the NS Counterclaimants' costs, reduce their ability to compete, and harm competition. Thus, Sarepta's abuse of the legal process by asserting patents it knows were fraudulently obtained has harmed competition in the Product Market in the U.S. as well as the NS Counterclaimants.

111. The amount of antitrust injury the NS Counterclaimants have suffered and will continue to suffer will be proven at trial.

PRAYER FOR RELIEF

WHEREFORE, the NS Counterclaimants pray for judgment against Defendant Sarepta, respectfully requests the following relief:

1. A judgment that the UWA Patents are invalid;

2. A judgment that the UWA Patents are unenforceable;

3. A judgment that this is an exceptional case and that Nippon Shinyaku be awarded its attorneys' fees incurred in this action pursuant to 35 U.S.C. § 285;

4. A judgment that Sarepta violated Section 2 of the Sherman Act, 15 U.S.C. § 2 and has injured the NS Counterclaimants;

5. An award of treble antitrust damages under Section 4 of the Clayton Act, 15. U.S.C. 15 U.S.C. § 14(a);

[redacted]

6. Permanently enjoining Sarepta from monopolizing or attempting to monopolize the relevant product and geographic markets, as provided by 15 U.S.C. § 26;

7. Costs and expenses in this action; and

8. Such other and further relief as the Court deems just and appropriate.

DEMAND FOR A JURY TRIAL

Pursuant to Federal Rule of Civil Procedure 38(c), Nippon Shinyaku demands a jury trial on Claims II-IX and XI.

Dated: September 1, 2023

Respectfully submitted,

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